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CLASSIFICATION OF THE POLYNOMIAL ZEROS OF THE 3-j AND THE 6-j COEFFICIENTS

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ABSTRACT

The polynomial or 'non-trivial' zeros of the Clebsch-Gordan (3-j) and the Racah (6-j) coefficients are classified according to their degree. The majority of these zeros, hitherto considered as non-trivial, are shown to be polynomial zeros of degree one, arising due to binomial expansions for these coefficients.

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RESUMEN

Los ceros polinomiales o "no triviales" de los coeficientes de Clebsch-Gordan (3-j) y de Racah (6-j), se clasifican de acuerdo a su grado. Se demuestra que la mayoría de estos ceros, hasta ahora considerados no-triviales, son ceros polinomiales de grado uno, que aparecen debido a expansiones binomiales de estos coeficientes.

1. INTRODUCTION

The Clebsh-Gordan coefficient, $C(j_1j_2j_3;\, m_1m_2m_3)$, or the 3-j symbol:

$$\begin{pmatrix} j_1 & j_2 & j_3 \\ m_1 & m_2 & m_3 \end{pmatrix} = (-1)^{j_1-j_2+m_3}\,(2j_3+1)^{1/2}\; C(j_1\, j_2\, j_3;\, m_1\, m_2\, -m_3) \quad ,$$

which is an angular momentum coupling coefficient for the coupling of two angular momenta, and the Racah coefficient, $W(abcd;ef)$, or the 6-j symbol:

$$\begin{Bmatrix} a & b & e \\ d & c & f \end{Bmatrix} = (-1)^{2+b+c+d}\, W(abcd;ef) \quad ,$$

which is a recoupling coefficient for the recoupling of three angular momenta, play a fundamental role in the quantum theory of angular momentum. The Racah-Wigner Algebra in Quantum Theory, by Biedenharn and Louck[1,2] deal with all the ramifications of angular momentum theory and some of the applications to physical problems.

Trivial zeros of these coefficients manifest themselves due to a violation of the triangular inequalities to be satisfied by the angular momenta (in the case of both the 3-j and the 6-j coefficients), or, the violation of the additive property of the projections of the angular momenta and the violation of a symmetry property (in the case of the 3-j coefficient). The existence of a class of zeros of these coefficients, not due to the afore-said reasons, have been called as polynomial or "non-trivial" zeros, in literature[1,2], since they arise in the polynomial parts of these coefficients. The first systematic studies of the polynomial zeros of the 6-j coefficient and the 3-j coefficient, were by Koozekanani and Biedenharn[3] and by Varshalovich *et al.*[4] respectively.

Koozekanani and Biedenharn[3] tabulated the polynomial zeros of the 6-j coefficient for arguments ≤ 18.5 and provided explanations for the occurrance of two of the 1410 listed zeros - Viz. W(1.5,2,1.5,2; 1.5,2) is zero due to a violation of the triangle rule for "quasi-spin", while all the normal triangular inequalities are indeed satisfied; and that W(3 5 3 5; 3 3) is zero due to the embedding of the exceptional Lie algebra G_2 in the algebra SO_7. Judd[5] provided an explanation for the occurrance of two other polynomial zeros --Viz. W(6 4 5 5 ; 9 2) and W(2 4 2 5 ; 5 2), being zero due to vanishings of fractional parentage coefficients in the atomic g-shell, though no systematic relationship was found to exist for such vanishings and what is more, a third fractional parentage coefficient becoming zero in the same shell is not related to any non-trivial 6-j coefficient. More recently, Vanden Berghe *et al.*[6], followed the suggestion of Biedenharn and Louck[2], that realizations of exceptional Lie algebras might provide bases for explaining these zeros, and have started to account for some of the polynomial zeros of the 6-j coefficient in a continuing series of papers.

Varshalovich *et al.*[4] listed the polynomial zeros of the 3-j coefficient for $J(=j_1+j_2+j_3) \leq 27$. Bowich[7] reduced these listings by taking into account the Regge symmetries[8] for the 3-j coefficient.

In this article, we classify the polynomial zeros of the 3-j and the 6-j coefficients, according their degree. The majority of these zeros tabulated to date -- Viz. 21 out of 36 in the case of the 3-j coefficient and 1174 out of 1410 in the case of the 6-j coefficient -- are polynomial zeros of degree one, since a rearrangement of the coefficients into binomial expansions reveals[9] their presence explicitly. In section 2, we outline the basis for our assertion and section 3 contains a brief discussion of the numerical method adopted to tabulate the zeros of the 6-j coefficient, followed by the classified tables themselves.

2. THE 3-j AND THE 6-j COEFFICIENTS

We have shown[9] that following the procedure of Sato[10], using the set of six series representations for the 3-j coefficient defined by one of us (K.S.R.)[11], we can obtain formal binomial expansions, which are generalizations of the result obtained by Sato and Kaguei[12]. We further showed that this binomial expansion is exact for n=1 (where n+1 indicates the number of terms in the series expansion) and therefore, we redefine the 3-j coefficient as

$$\begin{pmatrix} j_1 & j_2 & j_3 \\ m_1 & m_2 & m_3 \end{pmatrix} \equiv \| R_{ik} \| .$$

$$= \left\| \begin{matrix} -j_1+j_2+j_3 & j_1-j_2+j_3 & j_1+j_2-j_3 \\ j_1-m_1 & j_2-m_2 & j_3-m_3 \\ j_1+m_1 & j_2+m_2 & j_3+m_3 \end{matrix} \right\|$$

$$= \delta_{m_1+m_2+m_3,0} \prod_{i,k}^{3} [R_{ik}!/(J+1)]^{1/2} (-1)^{\sigma(pqr)}$$

$$\cdot (1 - \delta_{x,y}\ \delta_{n,1}) \tfrac{1}{2} [2-(1-(-1)^J)(\delta_{m_1,0}\delta_{m_2,0}\ \delta_{m_3,0}]$$

$$\cdot \sum_s (-1)^s [s!(R_{2p}-s)!\ (R_{3q}-s)!\ (R_{1r}-s)!$$

$$(s+R_{3r}-R_{2p})!\ (s+R_{2r}-R_{3q})!]^{-1} \quad , \qquad (1)$$

for all permutations of (pqr) = (123), with

$$\sigma(pqr) = \begin{cases} R_{3q} - R_{2q}, \text{ for even (123)} \\ J+R_{3p} - R_{2q}, \text{ for odd (123)} \end{cases} \quad , \qquad (2)$$

and $J = j_1+j_2+j_3$. The factor $\frac{1}{2}[2-(1-(-1)^J)\ \delta_{m_1,0}\ \delta_{m_2,0}\ \delta_{m_3,0}]$, where $\delta_{m,n}$ is the Kronecker delta function, takes care of the parity 3-j coefficient and the factor $(1-\delta_{x,y}\ \delta_{n,1})$ explicitly represents the fact that the exact binomial expansion for n = 1 yields the zeros of the 3-j coefficient, which can be shown(9) to be polynomial zeros of degree one. The values of x and y are given by

$$x = R_{mr}R_{kp} \qquad \text{and} \qquad y = R_{mp}R_{kr} \tag{3}$$

when the number of terms is given by $n = \min(R_{2p},R_{3q},R_{1r}) = R_{\ell q}$(say) and (ℓmk) and (pqr) correspond to specific cyclic permutations of (123).

The 6-j coefficient can be rearranged(9), using the concept of generalized powers(12) and following a procedure similar to but different from that of Sato(10), into a formal binomial expansion. We have shown(9) that the binomial expansion is exact for n = 1, when n+1 represents the number of terms in the series expansion, and therefore, we redefine the 6-j coefficient as

$$\begin{Bmatrix} a & b & e \\ d & c & f \end{Bmatrix} = N(1-\delta_{X,Y}\ \delta_{n,1})$$

$$\cdot \sum_p (-1)^p (p+1)!\ [\prod_{i=1}^{4} (p-\alpha_i)!\ \prod_{j=1}^{3} (\beta_j-p)!]^{-1} \quad , \tag{4}$$

where the range of p is restricted to non-negative integral values of the factorials

$$\alpha_0 \leq P \leq \beta_0 \quad ,$$

with

$$\alpha_0 = \max(\alpha_1,\alpha_2,\alpha_3,\alpha_4) \quad , \qquad \beta_0 = \min(\beta_1,\beta_2,\beta_3) \quad ,$$

$$\alpha_1 = a + b + e \quad , \qquad \beta_1 = a + b + c + d \quad ,$$

$$\alpha_2 = c + d + e \quad , \qquad \beta_2 = a + d + e + f \quad ,$$

$$\alpha_3 = a + c + f \quad , \qquad \beta_3 = b + c + e + f \quad ,$$

$$\alpha_4 = b + d + f \quad , \qquad n = \beta_0 - \alpha_0 \quad ,$$

$$N = \Delta(abe) \cdot \Delta(cde) \cdot \Delta(acf) \cdot \Delta(bdf) \quad ,$$

and

$$\Delta(xyz) = [\,(x+y-z)!\ (x-y+z)!\ (-x+y+z)!\ /(x+y+z+1)!\,]^{1/2} \quad . \tag{5}$$

The X and Y which appear in the multiplicative factor in (4) are given by:

$$X = (\beta_s - \alpha_0)\ (\beta_t - \alpha_0)\ (\beta_0 + 1)$$
$$Y = (\beta_0 - \alpha_k)\ (\beta_0 - \alpha_1)\ (\beta_0 - \alpha_m) \tag{6}$$

where β_s and β_t correspond to two of the three β's other than β_0 and α_k, α_1, α_m correspond to three of the four α's other than α_0. The $(1 - \delta_{X,Y}\, \delta_{n,1})$ factor explicitly represents the fact that the exact binomial expansion reveals additional structure zeros, which are the polynomial zeros of degree one of the 6-j coefficient.

3. CLASSIFICATION OF THE POLYNOMIAL ZEROS

a) The 3-j coefficient

Polynomial zeros of the 3-j coefficient were listed, for $J(=j_1+j_2+j_3) \leq 27$ by Varshalovich *et al.*[4]. This list has been reduced by Bowick[7] with the help of the Regge symmetries[8,11] for the 3-j coefficient. The number of terms in the polynomial part of the 3-j coefficient is governed by: $n = \min(R_{2p}, R_{3q}, R_{1r})$ and we use this simple prescription to separate the polynomial zeros listed by Bowick[7] into those which correspond to degree 1, 2 and 3. In Table I we enumerate the polynomial zeros of degree 1, and in Table II we list the polynomial zeros of degree 2 and 4. From these tables, we conclude that for $J \leq 27$, there are 36 polynomial zeros[13], and of these 21 are polynomial zeros of degree 1, revealed by the exact binomial expansion for this coefficient, represented by the multiplicative factor (1).

b) The 6-j coefficient

$\begin{Bmatrix} j_1 & j_2 & j_3 \\ \ell_1 & \ell_2 & \ell_3 \end{Bmatrix}$ Koozekanani and Biedenharn[3] calculated the 6-j coefficient for arguments j_i, $\ell_i \leq 18.5$ for i=1, 2, 3 and found its polynomial zeros. Using the symmetries of the 6-j coefficient they ordered the arguments j_1, j_2, j_3, ℓ_1, ℓ_2, ℓ_3 in a speedometric fashion with j_1 the slowest varying and ℓ_3 the most rapidly changing variable. The vanishing values of the 6-j coefficient were calculated by a computer program which resorted to the use of numbers decomposed into powers of prime factors.

We have used a simple program, which checks for the multiplicative factor in (2) given by $(1 - \delta_{X,Y}, \delta_{n,1})$ being equal to zero, to find all the polynomial zeros of degree one for j_i, $\ell_i \leq$ 18.5 for i=1, 2, 3. These polynomial zeros of degree 1 are tabulated in Table III. We notice that 1174 out of 1420 polynomial zeros belong to this trivial category, revealed by the exact binomial expansion for the 6-j coefficient. Having separated the majority of the zeros, we then sorted out the remaining few hundreds of the polynomial zeros according to their degree given by $n = \beta_0 - \alpha_0$. These are listed in Tables IV and V.

In Table VI we list the polynomial zeros of the 6-j coefficient which have been explained according to either: (i) triangle rule violation for quasi-spin, (ii) vanishing of fractional parentage coefficients in the atomic g-shell, or (iii) realizations pf exceptional Lie algebras G_2, F_4 and E_6. In the last column of this table, we give n which corresponds to the degree of the polynomial zero. Here we note that of the 12 generic entries (which lead to 27 more from Regge symmetries), 11 are polynomial zeros of degree one and only one (which leads to five more from Regge symmetries) is a polynomial zero of degree two.

In conclusion, we assert that the majority of the polynomial zeros - viz. 21 out of 36 in the case of the 3-j coefficient and 1174 out of 1420 in the case of the 6-j coefficient - given in Table I (3-j) and

Table III (6-j) are trivial zeros (Note: hitherto, these were listed as 'non-trivial' zeros) which can be explained by simple multiplicative factors given by (1) and (4). These trivial zeros arise due to the exact binomial forms into which the 3-j and the 6-j coefficient can be cast. It is suggested that the multiplicative factors may be explicitly included in the definitions of the 3-j and the 6-j coefficients, as in (1) and (4), since the binomial forms for these coefficients are not normally referred to in literature.

As has been pointed out by Vanden Berghe *et al.*[(6)], one can continue the program of giving group theoretic explanations on the basis of realizations of exceptional Lie algebras - which are by themselves fascinating - for more polynomial zeros of the 6 j coefficient. However, since the 3-j and the 6-j coefficients can be rearranged into generalized hypergeometric functions of unit argument which are analytic, it may be worthwhile to investigate the vanishings of these coefficients as zeros of analytic functions and derive, if possible, closed form formulas by a generalization of the Siewert - Burniston method[(16)]. In this article, we have presented closed form expressions for the polynomial zeros of degree one the 3-j and the 6-j coefficients, which are independent of the numerical values of the arguments of the coefficients whose zeros are sought.

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13. In ref. 1, p. 428, 39 non-trivial zeros of the 3-j symbol are tabulated. However, the following entries are not to be counted:

j_1	j_2	j_3	m_1	m_2	m_3
10	10	4	9	-4	-5
13	10.5	3.5	1	-1	0
11	11	1	3	-3	0

For, the first two are wrong entries (since m_3 j_3 and m_3 is integral while j_3 is half-integral, respectively) and the 3-j symbol corresponding to the third entry above has a non-zero value.
14. Though it is stated that the tables in ref.1 are for arguments j_i, $\ell_i \leq 18.5$, for i=1, 2, 3; the tables end with j_1=18.5 and j_2=18.0. In our listing, we have nine more entries which correspond to j_1=j_2= 18.5.
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Table I. Polynomial zeros of degree one of the 3-j Coefficient $\begin{pmatrix} j_1 & j_2 & j_3 \\ m_1 & m_2 & m_3 \end{pmatrix}$

j_1	j_2	j_3	m_1	m_2	m_3
3	3	2	2	- 2	0
5	4	2	3	- 2	- 1
6	5	3	5	- 4	- 1
5	5	4	4	- 3	- 1
6	6	3	5	- 5	0
8	6	3	6	- 4	- 2
9	8	2	5	- 4	- 1
8	6	5	6	- 5	- 1
9	7	4	8	- 6	- 2
8	6	6	5	- 5	0
8	7	5	6	- 6	0
11	10	2	6	- 5	- 1
11	9	3	4	- 3	- 1
11	8	5	8	- 4	- 4
10	9	5	4	0	- 4
12	9	5	11	- 8	- 3
11	9	6	9	- 8	- 1
11	9	6	6	- 1	- 5
10	9	7	- 7	8	- 1
13	12	2	7	- 6	- 1
11	10	6	9	- 9	0

Table II. Polynomial zeros of degree 2 and 4 of the 3j - coefficient

Polynomial zeros of degree 2.

j_1	j_2	j_3	m_1	m_2	m_3
6	4	4	2	- 2	0
9	8	3	4	- 4	0
15/2	15/2	5	11/2	- 7/2	- 2
19/2	15/2	4	1/2	- 3/2	1
19/2	13/2	5	1/2	- 3/2	1
21/2	21/2	3	17/2	-17/2	0
11	8	5	8	- 6	- 2
8	8	8	6	- 5	- 1
9	9	7	5	0	- 5
25/2	25/2	2	15/2	-15/2	0
25/2	21/2	4	9/2	- 9/2	0
25/2	11	7/2	3/2	0	-3/2
23/2	7	13/2	15/2	- 5	-5/2

Polynomial zeros of degree 4.

j_1	j_2	j_3	m_1	m_2	m_3
11	9	6	0	1	-1
9	8	8	- 5	4	1

Table III. Polynomial zeros of degree one of the 6-j coefficient

j_1	j_2	j_3	l_1	l_2	l_3
2.0	2.0	2.0	1.5	1.5	1.5
3.0	2.0	2.0	1.0	2.0	2.0
3.5	3.0	1.5	1.0	1.5	3.0
3.5	3.5	3.0	2.5	1.5	3.0
4.0	3.0	2.0	2.0	3.0	3.0
4.0	3.0	3.0	2.0	3.0	2.0
4.0	3.5	2.5	2.0	2.5	2.5
5.0	4.0	2.0	3.0	4.0	4.0
5.0	4.0	4.0	3.0	4.0	2.0
5.0	4.5	1.5	2.0	2.5	4.5
5.0	4.5	2.5	2.0	1.5	4.5
5.0	4.5	4.5	3.5	3.0	3.0
5.0	5.0	2.0	2.0	2.0	4.0
5.0	5.0	3.0	3.0	3.0	3.0
5.0	5.0	4.0	3.5	1.5	4.5
5.5	4.0	3.5	1.0	3.5	4.0
6.0	4.0	3.0	1.5	3.5	3.5
6.0	4.5	2.5	2.5	4.0	4.0
6.0	5.0	2.0	4.0	5.0	5.0
6.0	5.0	3.0	1.0	3.0	5.0
6.0	5.0	3.0	2.5	3.5	3.5
6.0	5.0	5.0	4.0	5.0	2.0
6.0	6.0	4.0	2.5	2.5	5.5
6.0	6.0	6.0	5.0	4.0	3.0
6.5	5.0	2.5	1.5	3.0	4.5
6.5	5.0	2.5	3.5	5.0	4.5
6.5	5.0	4.5	2.0	4.5	4.0
6.5	5.0	4.5	3.5	5.0	2.5
6.5	6.0	1.5	3.0	3.5	6.0
6.5	6.0	3.5	3.0	1.5	6.0
6.5	6.0	3.5	3.0	2.5	5.0
6.5	6.0	3.5	3.5	4.0	3.5
6.5	6.0	5.5	3.5	5.0	3.5
6.5	6.0	5.5	4.5	3.0	4.5
6.5	6.5	5.0	4.5	1.5	6.0
6.5	6.5	5.0	4.5	3.5	4.0
6.5	6.5	5.0	5.0	5.0	2.5
7.0	4.5	4.5	2.5	4.0	4.0
7.0	5.5	5.5	4.0	4.5	3.5
7.0	6.0	2.0	2.5	3.5	5.5
7.0	6.0	2.0	5.0	6.0	6.0
7.0	6.0	5.0	4.0	4.0	4.0
7.0	6.0	6.0	2.5	5.5	4.5
7.0	6.0	6.0	5.0	6.0	2.0
7.0	6.5	2.5	2.5	3.0	5.0
7.0	6.5	4.5	4.5	5.0	3.0
7.0	6.5	5.5	2.5	5.0	5.0
7.5	6.0	5.5	3.0	5.5	4.0
7.5	6.5	3.0	2.0	4.0	6.5
7.5	6.5	4.0	2.0	3.0	6.5
7.5	6.5	5.0	3.0	5.0	4.5
7.5	7.0	3.5	2.0	3.5	6.0
7.5	7.5	7.0	5.0	3.0	6.5
8.0	5.5	5.5	3.5	5.0	4.0
8.0	6.0	3.0	3.0	5.0	5.0
8.0	6.0	3.0	4.0	6.0	5.0
8.0	6.0	5.0	1.0	5.0	6.0
8.0	6.0	5.0	3.5	4.5	4.5
8.0	6.0	5.0	4.0	6.0	3.0

j_1	j_2	j_3	l_1	l_2	l_3
8.0	6.5	3.5	2.5	3.0	6.0
8.0	6.5	3.5	3.0	4.5	4.5
8.0	7.0	2.0	6.0	7.0	7.0
8.0	7.0	4.0	4.0	5.0	4.0
8.0	7.0	7.0	5.5	4.5	4.5
8.0	7.0	7.0	6.0	7.0	2.0
8.0	7.5	1.5	4.0	4.5	7.5
8.0	7.5	4.5	4.0	1.5	7.5
8.0	7.5	6.5	5.5	3.0	6.0
8.0	8.0	6.0	5.5	1.5	7.5
8.0	8.0	7.0	4.0	4.0	7.0
8.5	7.0	4.5	1.0	4.5	7.0
8.5	7.0	6.5	4.0	6.5	4.0
8.5	8.0	2.5	1.0	2.5	3.0
8.5	8.0	5.5	4.0	5.5	5.0
8.5	8.0	6.5	4.5	3.0	7.5
8.5	8.5	5.0	3.5	2.5	8.0
9.0	6.0	4.0	2.0	5.0	5.0
9.0	6.5	5.5	2.0	6.5	6.5
9.0	6.5	6.5	2.0	6.5	5.5
9.0	6.5	6.5	4.5	6.0	4.0
9.0	7.0	6.0	2.0	6.0	6.0
9.0	7.5	2.5	3.0	4.5	6.5
9.0	7.5	2.5	5.0	6.5	6.5
9.0	7.5	3.5	4.0	6.5	7.5
9.0	7.5	5.5	4.5	5.0	5.0
9.0	7.5	6.5	4.0	3.5	7.5
9.0	8.0	2.0	1.5	2.5	7.5
9.0	8.0	2.0	5.5	6.5	7.5
9.0	8.0	2.0	7.0	8.0	8.0
9.0	8.0	3.0	3.0	4.0	6.0
9.0	8.0	3.0	3.0	5.0	8.0
9.0	8.0	5.0	3.0	3.0	8.0
9.0	8.0	6.0	5.0	3.0	7.0
9.0	8.0	6.0	5.0	4.0	5.0
9.0	8.0	6.0	6.0	7.0	3.0
9.0	8.0	8.0	1.5	7.5	7.5
9.0	8.0	8.0	5.5	7.5	3.5
9.0	8.0	8.0	7.0	8.0	2.0
9.0	8.5	4.5	4.0	2.5	7.5
9.0	8.5	8.5	7.0	5.5	4.5
9.0	9.0	4.0	4.0	3.0	7.0
9.0	9.0	4.0	5.0	5.0	5.0
9.0	9.0	5.0	5.0	4.0	6.0
9.0	9.0	5.0	6.0	6.0	4.0
9.0	9.0	8.0	6.0	3.0	8.0
9.0	9.0	8.0	7.0	5.0	5.0
9.5	6.5	5.0	2.5	6.5	6.0
9.5	6.5	6.0	2.5	6.5	5.0
9.5	7.0	3.5	2.0	4.5	6.0
9.5	7.0	3.5	4.5	7.0	5.5
9.5	7.0	5.5	2.5	6.0	5.5
9.5	7.0	5.5	4.5	7.0	3.5
9.5	7.5	6.0	4.5	3.5	7.0
9.5	8.0	4.5	3.5	3.0	7.5
9.5	8.0	4.5	4.5	6.0	4.5
9.5	8.0	7.5	5.0	7.5	4.0
9.5	8.0	7.5	6.0	3.5	7.0
9.5	8.5	4.0	3.5	3.5	7.0
9.5	8.5	5.0	4.5	4.5	6.0

Table III (continued)

j_1	j_2	j_3	l_1	l_2	l_3	j_1	j_2	j_3	l_1	l_2	l_3
9.5	8.5	8.0	6.5	4.5	6.0	11.0	8.0	5.0	1.5	5.5	7.5
9.5	9.0	1.5	5.0	5.5	9.0	11.0	8.0	5.0	3.0	4.0	8.0
9.5	9.0	5.5	5.0	1.5	9.0	11.0	8.0	6.0	4.0	4.0	8.0
9.5	9.0	6.5	2.5	5.0	8.5	11.0	8.0	6.0	5.0	8.0	4.0
9.5	9.0	7.5	6.5	3.0	7.5	11.0	8.5	4.5	3.0	4.5	7.5
9.5	9.0	7.5	6.5	5.0	5.5	11.0	8.5	8.5	6.5	8.0	4.0
9.5	9.0	7.5	7.5	9.0	2.5	11.0	9.0	3.0	2.0	4.0	8.0
9.5	9.5	6.0	5.5	2.5	8.0	11.0	9.0	3.0	3.5	5.5	7.5
9.5	9.5	6.0	5.0	5.0	5.5	11.0	9.0	5.0	4.0	5.0	7.0
9.5	9.5	6.0	7.0	7.0	3.5	11.0	9.0	5.0	5.0	7.0	5.0
9.5	9.5	7.0	6.5	1.5	9.0	11.0	9.0	6.0	1.0	6.0	9.0
9.5	9.5	9.0	8.0	7.0	3.5	11.0	9.0	6.0	5.0	6.0	6.0
10.0	6.0	5.0	3.0	6.0	6.0	11.0	9.0	6.0	6.0	8.0	4.0
10.0	6.0	6.0	3.0	6.0	5.0	11.0	9.0	8.0	4.0	8.0	6.0
10.0	6.5	5.5	3.0	5.5	5.5	11.0	9.5	3.5	3.5	5.0	7.0
10.0	7.5	3.5	3.5	6.0	6.0	11.0	9.5	5.5	4.5	3.0	9.0
10.0	7.5	7.5	5.5	7.0	4.0	11.0	9.5	5.5	6.0	7.5	4.5
10.0	8.0	3.0	4.5	6.5	6.5	11.0	9.5	7.5	4.0	7.5	6.5
10.0	8.0	4.0	3.5	5.5	5.5	11.0	9.5	7.5	5.5	8.0	5.0
10.0	8.0	7.0	3.0	7.0	6.0	11.0	9.5	7.5	7.5	9.0	3.0
10.0	8.0	8.0	6.0	6.0	5.0	11.0	9.5	9.5	7.5	6.0	6.0
10.0	8.5	4.5	2.0	3.5	8.5	11.0	10.0	2.0	4.0	5.0	9.0
10.0	8.5	5.5	2.0	4.5	8.5	11.0	10.0	2.0	5.0	6.0	9.0
10.0	8.5	7.5	6.0	5.5	5.5	11.0	10.0	2.0	9.0	10.0	10.0
10.0	9.0	2.0	8.0	9.0	9.0	11.0	10.0	7.0	5.5	7.5	5.5
10.0	9.0	4.0	1.0	4.0	9.0	11.0	10.0	7.0	6.0	4.0	8.0
10.0	9.0	4.0	4.5	5.5	5.5	11.0	10.0	9.0	5.5	8.5	5.5
10.0	9.0	5.0	2.0	5.0	8.0	11.0	10.0	9.0	7.5	4.5	7.5
10.0	9.0	6.0	5.5	5.5	5.5	11.0	10.0	10.0	4.0	9.0	7.0
10.0	9.0	9.0	7.5	7.5	3.5	11.0	10.0	10.0	5.0	9.0	6.0
10.0	9.0	9.0	8.0	9.0	2.0	11.0	10.0	10.0	9.0	10.0	2.0
10.0	10.0	8.0	5.0	4.0	9.0	11.0	10.5	1.5	6.0	6.5	10.5
10.0	10.0	10.0	8.5	6.5	4.5	11.0	10.5	2.5	2.0	3.5	10.5
10.5	6.5	6.0	1.5	6.5	6.0	11.0	10.5	3.5	2.0	2.5	10.5
10.5	8.0	4.5	4.5	8.0	7.5	11.0	10.5	4.5	4.5	4.0	8.0
10.5	8.0	6.5	1.0	6.5	8.0	11.0	10.5	6.5	6.0	1.5	10.5
10.5	8.0	7.5	4.5	8.0	4.5	11.0	10.5	6.5	6.0	4.5	7.5
10.5	8.5	4.0	2.5	5.5	8.0	11.0	10.5	6.5	6.5	6.0	6.0
10.5	8.5	4.0	3.5	6.5	8.0	11.0	10.5	8.5	7.5	3.0	9.0
10.5	8.5	5.0	3.0	7.0	8.5	11.0	10.5	8.5	8.0	7.5	4.5
10.5	8.5	7.0	3.0	5.0	8.5	11.0	11.0	3.0	3.0	2.0	10.0
10.5	9.0	4.5	2.5	5.0	7.5	11.0	11.0	3.0	4.0	4.0	9.0
10.5	9.0	8.5	2.5	8.0	7.5	11.0	11.0	6.0	4.5	2.5	10.5
10.5	9.0	8.5	3.5	8.0	6.5	11.0	11.0	8.0	7.5	1.5	10.5
10.5	9.0	8.5	6.0	8.5	4.0	11.0	11.0	8.0	7.5	5.5	6.5
10.5	9.5	3.0	4.0	6.0	9.5	11.0	11.0	8.0	8.0	7.0	5.0
10.5	9.5	5.0	3.5	5.5	7.0	11.0	11.0	8.0	9.0	9.0	3.0
10.5	9.5	6.0	3.0	6.0	7.5	11.0	11.0	9.0	3.0	4.0	9.0
10.5	9.5	6.0	4.0	3.0	9.5	11.5	7.5	5.0	2.0	5.0	7.5
10.5	9.5	6.0	4.5	6.5	6.0	11.5	8.0	5.5	4.0	7.5	5.0
10.5	9.5	8.0	3.5	7.5	7.0	11.5	8.5	6.0	4.0	5.0	7.5
10.5	9.5	8.0	4.5	4.5	9.0	11.5	8.5	7.0	2.0	8.0	8.5
10.5	10.5	9.0	7.0	3.0	9.5	11.5	8.5	8.0	2.0	7.0	8.5
11.0	6.0	6.0	2.0	6.0	6.0	11.5	9.0	7.5	2.0	7.5	8.0
11.0	7.0	7.0	4.0	6.0	6.0	11.5	9.0	7.5	6.0	7.5	5.0
11.0	7.5	4.5	5.0	7.5	7.5	11.5	9.5	7.0	5.5	4.5	8.0
11.0	7.5	7.5	5.0	7.5	4.5	11.5	9.5	7.0	6.0	7.0	5.5
11.0	8.0	4.0	3.0	5.0	8.0	11.5	9.5	7.0	7.0	9.0	3.5
11.0	8.0	4.0	4.0	6.0	8.0	11.5	10.0	2.5	4.5	6.0	8.5
11.0	8.0	4.0	5.0	8.0	6.0	11.5	10.0	2.5	6.5	8.0	8.5

Table.III(continued)

j_1	j_2	j_3	ℓ_1	ℓ_2	ℓ_3
11.5	10.0	4.5	3.0	6.5	10.0
11.5	10.0	6.5	3.0	4.5	10.0
11.5	10.0	6.5	5.5	5.0	7.5
11.5	10.0	9.5	7.0	9.5	4.0
11.5	10.5	2.0	6.0	7.0	9.5
11.5	10.5	3.0	2.5	2.5	10.0
11.5	10.5	8.0	7.5	7.5	5.0
11.5	11.0	3.5	4.5	5.0	7.5
11.5	11.0	5.5	3.0	5.5	9.0
11.5	11.0	5.5	5.0	2.5	10.0
11.5	11.0	5.5	7.0	7.5	5.0
11.5	11.0	8.5	7.5	5.0	7.5
11.5	11.0	10.5	9.0	7.5	5.0
11.5	11.5	11.0	7.5	4.5	10.0
12.0	8.0	5.0	2.5	5.5	6.5
12.0	8.0	8.0	5.0	7.0	6.0
12.0	8.5	7.5	5.0	6.5	5.5
12.0	9.0	4.0	4.0	7.0	7.0
12.0	9.0	7.0	4.0	8.0	6.0
12.0	9.0	9.0	5.5	7.5	5.5
12.0	9.5	4.5	1.5	5.0	9.0
12.0	9.5	4.5	4.0	6.5	6.5
12.0	9.5	9.5	7.5	9.0	4.0
12.0	10.0	3.0	6.0	8.0	8.0
12.0	10.0	8.0	6.5	6.5	6.5
12.0	10.0	9.0	5.0	9.0	6.0
12.0	10.0	9.0	6.5	9.5	4.5
12.0	10.5	2.5	7.5	9.0	9.0
12.0	10.5	3.5	3.5	6.0	10.0
12.0	10.5	10.5	8.5	8.0	5.0
12.0	11.0	2.0	10.0	11.0	11.0
12.0	11.0	3.0	5.0	7.0	11.0
12.0	11.0	4.0	2.0	5.0	11.0
12.0	11.0	5.0	2.0	4.0	11.0
12.0	11.0	7.0	5.0	3.0	11.0
12.0	11.0	8.0	5.0	8.0	7.0
12.0	11.0	11.0	9.0	7.0	6.0
12.0	11.0	11.0	10.0	11.0	2.0
12.0	11.5	4.5	2.0	4.5	10.5
12.0	11.5	4.5	3.5	5.0	9.0
12.0	11.5	4.5	6.0	6.5	6.5
12.0	11.5	9.5	1.5	9.0	11.0
12.0	11.5	9.5	6.5	9.0	6.0
12.0	11.5	9.5	8.0	9.5	4.5
12.0	11.5	10.5	9.0	6.5	6.5
12.0	12.0	6.0	3.5	3.5	11.5
12.0	12.0	7.0	7.5	6.5	6.5
12.0	12.0	9.0	6.0	4.0	11.0
12.0	12.0	9.0	8.5	6.5	6.5
12.0	12.0	10.0	8.0	3.0	11.0
12.5	8.5	6.0	3.0	9.0	7.5
12.5	8.5	7.0	4.5	7.5	6.0
12.5	9.0	4.5	2.0	4.5	9.0
12.5	9.0	4.5	2.5	6.0	7.5
12.5	9.0	4.5	5.5	9.0	6.5
12.5	9.0	6.5	3.0	7.5	7.0
12.5	9.0	6.5	5.5	9.0	4.5
12.5	9.5	5.0	5.0	9.0	8.5
12.5	9.5	9.0	3.0	9.0	7.5
12.5	9.5	9.0	7.0	9.0	4.5

j_1	j_2	j_3	ℓ_1	ℓ_2	ℓ_3
12.5	10.0	3.5	4.0	5.5	10.0
12.5	10.0	5.5	4.0	3.5	10.0
12.5	10.0	5.5	4.0	4.5	9.0
12.5	10.0	5.5	5.5	8.0	5.5
12.5	10.0	8.5	3.0	8.5	8.0
12.5	10.0	8.5	6.5	6.0	7.5
12.5	10.5	3.0	5.0	7.0	8.5
12.5	10.5	3.0	8.0	10.0	8.5
12.5	10.5	6.0	2.0	7.0	10.5
12.5	10.5	7.0	2.0	6.0	10.5
12.5	11.0	3.5	2.5	5.0	10.5
12.5	11.0	3.5	4.5	7.0	10.5
12.5	11.0	3.5	7.0	9.5	11.0
12.5	11.0	4.5	4.0	4.5	9.0
12.5	11.0	6.5	2.0	6.5	10.0
12.5	11.0	6.5	5.0	7.5	7.0
12.5	11.0	6.5	5.5	3.0	10.5
12.5	11.0	6.5	7.5	9.0	4.5
12.5	11.0	9.5	2.5	8.0	10.5
12.5	11.0	9.5	4.5	6.0	10.5
12.5	11.0	9.5	7.0	3.5	11.0
12.5	11.0	9.5	8.5	9.0	4.5
12.5	11.0	10.5	8.0	10.5	4.0
12.5	11.0	10.5	8.5	6.0	7.5
12.5	11.5	4.0	2.5	4.5	10.0
12.5	11.5	4.0	5.0	6.0	7.5
12.5	11.5	7.0	7.0	7.0	6.5
12.5	11.5	9.0	2.5	8.5	10.0
12.5	11.5	9.0	7.5	9.5	5.0
12.5	11.5	10.0	8.5	4.5	9.0
12.5	11.5	10.0	8.5	6.5	7.0
12.5	11.5	10.0	10.0	11.0	2.5
12.5	12.0	1.5	3.5	4.0	11.5
12.5	12.0	1.5	7.0	7.5	12.0
12.5	12.0	7.5	3.5	5.0	11.5
12.5	12.0	7.5	7.0	1.5	12.0
12.5	12.0	9.5	8.5	3.0	10.5
12.5	12.5	5.0	5.5	4.5	9.0
12.5	12.5	8.0	7.5	4.5	9.0
12.5	12.5	8.0	8.5	7.5	6.0
12.5	12.5	9.0	5.0	5.0	11.5
12.5	12.5	9.0	8.5	1.5	12.0
13.0	8.0	6.0	3.5	7.5	7.5
13.0	8.5	6.5	3.5	7.0	7.0
13.0	9.0	5.0	5.5	8.5	8.5
13.0	9.0	8.0	2.5	8.5	7.5
13.0	9.0	9.0	6.0	8.0	6.0
13.0	9.5	8.5	3.5	9.0	7.0
13.0	10.0	8.0	1.0	8.0	10.0
13.0	10.0	8.0	3.5	8.5	7.5
13.0	10.0	8.0	6.0	7.0	7.0
13.0	10.5	3.5	3.0	4.5	10.5
13.0	10.5	3.5	4.0	6.5	8.5
13.0	10.5	3.5	5.0	6.5	10.5
13.0	10.5	3.5	6.5	9.0	8.0
13.0	10.5	3.5	7.5	10.0	8.0
13.0	10.5	4.5	3.0	3.5	10.5
13.0	10.5	6.5	5.0	3.5	10.5
13.0	10.5	6.5	5.5	7.0	7.0
13.0	10.5	9.5	7.5	8.0	6.0

Table.III(continued)

j_1	j_2	j_3	l_1	l_2	l_3
13.0	10.5	10.5	8.0	7.5	6.5
13.0	10.5	10.5	8.5	10.0	4.0
13.0	11.0	3.0	9.0	11.0	9.0
13.0	11.0	4.0	3.0	4.0	10.0
13.0	11.0	4.0	4.0	6.0	8.0
13.0	11.0	5.0	5.0	9.0	11.0
13.0	11.0	9.0	5.0	5.0	11.0
13.0	11.0	9.0	7.5	3.5	10.5
13.0	11.0	9.0	7.5	7.5	6.5
13.0	11.0	9.0	8.0	9.0	5.0
13.0	11.0	9.0	9.0	11.0	3.0
13.0	11.0	10.0	6.0	10.0	6.0
13.0	11.0	10.0	8.0	7.0	7.0
13.0	11.5	4.5	4.0	7.5	11.5
13.0	11.5	7.5	4.0	4.5	11.5
13.0	11.5	9.5	3.5	7.0	11.0
13.0	12.0	2.0	3.0	4.0	11.0
13.0	12.0	2.0	8.0	9.0	11.0
13.0	12.0	2.0	11.0	12.0	12.0
13.0	12.0	5.0	4.5	3.5	10.5
13.0	12.0	5.0	5.0	5.0	9.0
13.0	12.0	5.0	6.5	7.5	6.5
13.0	12.0	8.0	7.0	4.0	10.0
13.0	12.0	8.0	8.0	8.0	6.0
13.0	12.0	9.0	2.5	7.5	11.5
13.0	12.0	12.0	3.0	11.0	10.0
13.0	12.0	12.0	8.0	11.0	5.0
13.0	12.0	12.0	11.0	12.0	2.0
13.0	12.5	1.5	4.5	5.0	12.0
13.0	12.5	2.5	3.0	3.5	10.5
13.0	12.5	5.5	7.5	8.0	6.0
13.0	12.5	6.5	6.0	3.5	10.5
13.0	12.5	8.5	2.5	3.0	11.0
13.0	12.5	8.5	3.5	8.0	10.0
13.0	12.5	8.5	6.0	8.5	7.5
13.0	12.5	8.5	10.0	10.5	3.5
13.0	12.5	11.5	3.0	10.5	10.5
13.0	12.5	12.5	10.5	8.0	6.0
13.0	12.5	12.5	11.0	10.5	3.5
13.0	13.0	6.0	6.0	4.0	10.0
13.0	13.0	7.0	7.0	5.0	9.0
13.0	13.0	12.0	8.5	4.5	11.5
13.5	10.5	5.0	3.0	7.0	9.5
13.5	11.0	4.5	6.0	9.5	10.0
13.5	11.0	5.5	3.0	6.5	9.0
13.5	11.0	7.5	1.0	7.5	11.0
13.5	11.0	9.5	4.0	9.5	8.0
13.5	11.0	9.5	7.0	10.5	5.0
13.5	12.0	11.5	9.0	11.5	4.0
13.5	12.5	3.0	6.0	8.0	12.5
13.5	12.5	8.0	6.0	3.0	12.5
13.5	13.0	2.5	3.0	4.5	13.0
13.5	13.0	4.5	3.0	2.5	13.0
13.5	13.0	6.5	6.0	7.5	8.0
13.5	13.0	7.5	7.0	8.5	7.0
13.5	13.0	11.5	7.0	10.5	7.0
13.5	13.5	7.0	5.5	2.5	13.0
13.5	13.5	11.0	9.0	3.0	12.5
14.0	8.0	8.0	3.5	7.5	7.5
14.0	8.5	8.5	4.5	8.0	7.0

j_1	j_2	j_3	l_1	l_2	l_3
14.0	9.0	8.0	4.5	7.5	7.5
14.0	10.0	5.0	3.5	6.5	9.5
14.0	10.0	5.0	6.0	10.0	7.0
14.0	10.0	7.0	6.0	10.0	5.0
14.0	10.0	10.0	7.0	9.0	6.0
14.0	10.5	4.5	4.5	8.0	8.0
14.0	10.5	4.5	6.5	9.0	10.0
14.0	10.5	5.5	3.5	6.0	9.0
14.0	10.5	8.5	2.0	9.5	10.5
14.0	10.5	9.5	2.0	8.5	10.5
14.0	10.5	9.5	7.5	10.0	5.0
14.0	11.0	4.0	8.0	11.0	8.0
14.0	11.0	5.0	4.5	7.5	7.5
14.0	11.0	6.0	2.5	7.5	10.5
14.0	11.0	6.0	4.5	9.5	10.5
14.0	11.0	6.0	6.0	9.0	6.0
14.0	11.0	8.0	6.0	5.0	10.0
14.0	11.0	8.0	6.0	6.0	9.0
14.0	11.0	8.0	8.0	11.0	4.0
14.0	11.0	9.0	2.0	9.0	10.0
14.0	11.5	6.5	2.5	7.0	10.0
14.0	11.5	6.5	5.0	4.5	10.5
14.0	11.5	8.5	7.0	7.5	7.5
14.0	11.5	11.5	2.5	11.0	10.0
14.0	11.5	11.5	9.5	11.0	4.0
14.0	12.0	3.0	7.5	9.5	9.5
14.0	12.0	6.0	3.0	8.0	12.0
14.0	12.0	6.0	5.0	5.0	10.0
14.0	12.0	7.0	6.0	6.0	9.0
14.0	12.0	8.0	3.0	6.0	12.0
14.0	12.0	11.0	2.5	10.5	10.5
14.0	12.0	11.0	4.5	10.5	8.5
14.0	12.0	11.0	7.0	11.0	6.0
14.0	12.0	11.0	9.0	5.0	10.0
14.0	12.0	12.0	9.5	7.5	7.5
14.0	12.5	2.5	3.5	5.0	11.0
14.0	12.5	2.5	6.0	7.5	10.5
14.0	12.5	2.5	8.0	9.5	10.5
14.0	12.5	2.5	10.5	12.0	11.0
14.0	12.5	5.5	2.0	6.5	12.5
14.0	12.5	6.5	2.0	5.5	12.5
14.0	12.5	6.5	6.5	7.0	8.0
14.0	12.5	7.5	4.5	8.0	9.0
14.0	12.5	7.5	6.5	3.0	12.0
14.0	12.5	7.5	6.5	5.0	10.0
14.0	12.5	7.5	7.5	8.0	7.0
14.0	12.5	7.5	9.0	10.5	4.5
14.0	12.5	10.5	4.5	10.0	9.0
14.0	12.5	11.5	7.5	5.0	12.0
14.0	12.5	11.5	9.5	6.0	9.0
14.0	13.0	2.0	12.0	13.0	13.0
14.0	13.0	3.0	3.5	4.5	10.5
14.0	13.0	4.0	3.0	6.0	13.0
14.0	13.0	4.0	3.5	2.5	12.5
14.0	13.0	6.0	2.0	6.0	12.0
14.0	13.0	6.0	3.0	4.0	13.0
14.0	13.0	6.0	8.0	9.0	6.0
14.0	13.0	7.0	3.0	7.0	11.0
14.0	13.0	7.0	9.0	10.0	5.0
14.0	13.0	11.0	9.5	4.5	10.5

Table III (continued)

j_1	j_2	j_3	l_1	l_2	l_3
14.0	13.0	13.0	11.0	10.0	5.0
14.0	13.0	13.0	12.0	13.0	2.0
14.0	13.5	1.5	2.5	3.0	13.0
14.0	13.5	1.5	5.5	6.0	13.0
14.0	13.5	1.5	8.0	8.5	13.5
14.0	13.5	3.5	3.5	3.0	12.0
14.0	13.5	6.5	6.0	2.5	12.5
14.0	13.5	8.5	2.5	7.0	13.0
14.0	13.5	8.5	5.5	4.0	13.0
14.0	13.5	8.5	8.0	1.5	13.5
14.0	13.5	10.5	9.5	3.0	12.0
14.0	13.5	10.5	9.5	7.0	8.0
14.0	13.5	10.5	10.5	10.0	5.0
14.0	14.0	2.0	2.5	2.5	12.5
14.0	14.0	4.0	6.0	6.0	9.0
14.0	14.0	5.0	5.0	3.0	12.0
14.0	14.0	5.0	7.5	7.5	7.5
14.0	14.0	8.0	7.5	2.5	12.5
14.0	14.0	9.0	9.0	7.0	8.0
14.0	14.0	10.0	7.0	4.0	13.0
14.0	14.0	10.0	9.5	1.5	13.5
14.0	14.0	12.0	7.5	5.5	12.5
14.0	14.0	14.0	12.0	9.0	6.0
14.5	10.5	6.0	4.5	9.5	9.0
14.5	11.0	5.5	5.3	10.0	9.5
14.5	11.5	7.0	4.5	8.5	8.0
14.5	12.0	5.5	3.5	8.0	11.5
14.5	12.0	5.5	7.0	11.5	12.0
14.5	12.0	10.5	5.0	10.5	8.0
14.5	12.0	11.5	3.5	9.0	11.5
14.5	12.0	11.5	7.0	5.5	12.0
14.5	12.5	4.0	1.5	4.5	12.0
14.5	12.5	4.0	5.0	8.0	11.5
14.5	12.5	4.0	3.5	11.5	12.0
14.5	12.5	7.0	1.0	7.0	12.5
14.5	12.5	7.0	5.5	8.5	8.0
14.5	12.5	10.0	5.0	10.0	8.5
14.5	12.5	11.0	4.5	7.5	12.0
14.5	13.0	4.5	5.0	8.5	13.0
14.5	13.0	6.5	3.5	7.0	10.5
14.5	13.0	8.5	5.0	4.5	13.0
14.5	13.0	10.5	3.5	10.0	10.5
14.5	13.0	12.5	1.5	12.0	12.5
14.5	13.0	12.5	5.0	11.5	9.0
14.5	13.0	12.5	6.0	7.5	12.0
14.5	13.0	12.5	8.5	12.0	5.5
14.5	13.0	12.5	10.0	12.5	4.0
14.5	14.0	5.5	5.0	6.5	10.0
14.5	14.0	9.5	4.5	9.0	10.5
14.5	14.0	9.5	9.0	10.5	6.0
14.5	14.0	11.5	5.0	10.5	10.0
14.5	14.5	13.0	9.5	4.5	13.0
14.5	14.5	14.0	8.0	7.0	12.5
15.0	9.5	8.5	1.5	9.0	9.0
15.0	9.5	9.5	5.5	8.0	8.0
15.0	10.0	6.0	3.0	9.0	8.0
15.0	10.0	6.0	5.0	9.0	9.0
15.0	10.5	5.5	6.0	9.5	9.5
15.0	10.5	6.5	3.5	6.0	10.0
15.0	10.5	8.5	5.5	6.0	10.0

j_1	j_2	j_3	l_1	l_2	l_3
15.0	11.0	7.0	5.0	5.0	8.0
15.0	11.0	9.0	3.0	11.0	11.0
15.0	11.0	11.0	3.0	11.0	9.0
15.0	11.0	11.0	8.0	10.0	6.0
15.0	11.5	5.5	4.5	9.0	10.0
15.0	11.5	7.5	5.5	7.0	9.0
15.0	11.5	7.5	7.5	11.0	5.0
15.0	11.5	11.5	8.5	9.0	7.0
15.0	12.0	4.0	2.0	4.0	12.0
15.0	12.0	4.0	4.5	7.5	9.5
15.0	12.0	4.0	5.5	7.5	11.5
15.0	12.0	4.0	6.0	9.0	9.0
15.0	12.0	4.0	9.0	11.0	12.0
15.0	12.0	7.0	5.0	11.0	12.0
15.0	12.0	7.0	6.0	8.0	8.0
15.0	12.0	10.0	3.0	10.0	10.0
15.0	12.0	10.0	7.5	11.5	5.5
15.0	12.0	11.0	5.0	7.0	12.0
15.0	12.0	11.0	6.5	11.5	6.5
15.0	12.0	11.0	9.0	4.0	12.0
15.0	12.5	3.5	7.0	9.5	9.5
15.0	12.5	4.5	3.0	6.5	11.5
15.0	12.5	4.5	4.5	7.0	9.0
15.0	12.5	6.5	4.5	8.0	9.0
15.0	12.5	6.5	7.5	10.0	6.0
15.0	12.5	7.5	2.0	8.5	12.5
15.0	12.5	8.5	2.0	7.5	12.5
15.0	12.5	10.5	8.5	5.0	11.0
15.0	12.5	10.5	8.5	8.0	8.0
15.0	12.5	12.5	10.5	12.0	4.0
15.0	13.0	3.0	10.5	12.5	10.5
15.0	13.0	4.0	4.0	7.0	12.0
15.0	13.0	5.0	3.0	6.0	11.0
15.0	13.0	5.0	4.0	4.0	12.0
15.0	13.0	5.0	6.0	3.0	8.0
15.0	13.0	8.0	2.0	8.0	12.0
15.0	13.0	9.0	8.0	8.0	8.0
15.0	13.0	12.0	6.5	6.5	12.5
15.0	13.0	12.0	8.0	12.0	6.0
15.0	13.5	2.5	10.0	11.5	11.5
15.0	13.5	5.5	5.5	6.0	10.0
15.0	13.5	7.5	6.5	4.0	12.0
15.0	13.5	9.5	9.5	10.0	6.0
15.0	13.5	13.5	11.0	3.5	7.5
15.0	14.0	2.0	5.5	6.5	12.5
15.0	14.0	2.0	7.5	8.5	12.5
15.0	14.0	2.0	13.0	14.0	14.0
15.0	14.0	3.0	7.0	9.0	14.0
15.0	14.0	5.0	1.0	5.0	14.0
15.0	14.0	5.0	4.0	6.0	11.0
15.0	14.0	5.0	7.0	8.0	8.0
15.0	14.0	8.0	7.5	9.5	7.5
15.0	14.0	9.0	5.0	9.0	10.0
15.0	14.0	9.0	6.5	9.5	8.5
15.0	14.0	9.0	7.0	3.0	14.0
15.0	14.0	9.0	8.0	4.0	12.0
15.0	14.0	9.0	11.0	12.0	4.0
15.0	14.0	13.0	10.5	3.5	13.5
15.0	14.0	13.0	11.0	3.0	8.0
15.0	14.0	14.0	5.3	12.5	9.5

Table III (continued)

j_1	j_2	j_3	ℓ_1	ℓ_2	ℓ_3
15.0	14.0	14.0	7.5	12.5	7.5
15.0	14.0	14.0	13.0	14.0	2.0
15.0	14.5	6.5	6.5	5.0	11.0
15.0	14.5	8.5	3.5	7.0	9.0
15.0	14.5	10.5	9.5	6.0	10.0
15.0	14.5	12.5	11.5	10.0	6.0
15.0	15.0	10.0	6.0	5.0	14.0
15.0	15.0	12.0	10.0	3.0	14.0
15.5	9.5	8.0	2.0	9.0	8.5
15.5	10.5	7.0	3.5	9.5	9.0
15.5	11.0	5.5	3.0	7.5	9.0
15.5	11.0	5.5	5.0	8.5	10.0
15.5	11.0	5.5	5.0	9.5	8.0
15.5	11.0	5.5	6.5	11.0	7.5
15.5	11.0	7.5	1.5	8.0	10.5
15.5	11.0	7.5	3.5	9.0	8.5
15.5	11.0	7.5	6.5	11.0	5.5
15.5	11.5	6.0	5.0	9.0	7.5
15.5	11.5	7.0	4.5	5.5	11.0
15.5	11.5	10.0	8.0	11.0	5.5
15.5	12.0	4.5	3.5	6.0	11.5
15.5	12.0	6.5	4.5	6.0	10.5
15.5	12.0	6.5	5.0	7.5	9.0
15.5	12.0	6.5	6.5	10.0	6.5
15.5	12.0	9.5	1.0	9.5	12.0
15.5	12.0	10.5	8.0	5.5	11.0
15.5	12.5	4.0	4.5	6.5	12.0
15.5	12.5	5.0	3.5	5.5	11.0
15.5	12.5	5.0	7.5	11.5	11.0
15.5	12.5	12.0	9.5	5.5	11.0
15.5	13.0	4.5	9.0	12.5	12.0
15.5	13.0	5.5	5.5	10.0	12.5
15.5	13.0	7.5	6.0	4.5	12.0
15.5	13.0	11.5	6.0	11.5	8.0
15.5	13.5	3.0	4.0	6.0	11.5
15.5	13.5	5.0	4.5	5.5	11.0
15.5	13.5	5.0	7.0	11.0	13.5
15.5	13.5	6.0	4.0	9.0	13.5
15.5	13.5	8.0	8.0	9.0	7.5
15.5	13.5	9.0	4.0	6.0	13.5
15.5	13.5	11.0	7.0	5.0	13.5
15.5	13.5	13.0	10.5	7.5	9.0
15.5	14.0	2.5	5.0	6.5	12.0
15.5	14.0	2.5	12.5	14.0	12.5
15.5	14.0	3.5	4.0	5.5	11.0
15.5	14.0	6.5	6.0	5.5	11.0
15.5	14.0	8.5	7.5	3.0	13.5
15.5	14.0	8.5	8.0	7.5	9.0
15.5	14.0	8.5	10.5	12.0	4.5
15.5	14.0	10.5	6.0	10.5	9.0
15.5	14.0	10.5	7.5	11.0	7.5
15.5	14.0	10.5	9.0	5.5	11.0
15.5	14.0	12.5	7.5	12.0	7.5
15.5	14.0	12.5	10.5	6.0	10.5
15.5	14.0	12.5	10.5	8.0	8.5
15.5	14.0	12.5	11.0	3.5	13.0
15.5	14.0	12.5	11.0	10.5	6.0
15.5	14.0	12.5	12.5	14.0	2.5
15.5	14.0	13.5	11.0	13.5	4.0
15.5	14.5	10.0	5.5	5.5	14.0

j_1	j_2	j_3	ℓ_1	ℓ_2	ℓ_3
15.5	14.5	12.0	10.5	4.5	12.0
15.5	15.0	1.5	9.0	9.5	15.0
15.5	15.0	3.5	1.0	3.5	15.0
15.5	15.0	3.5	5.0	5.5	11.0
15.5	15.0	7.5	4.0	7.5	12.0
15.5	15.0	7.5	5.5	8.0	10.5
15.5	15.0	7.5	7.5	9.0	8.5
15.5	15.0	7.5	10.5	11.0	5.5
15.5	15.0	9.5	9.0	1.5	15.0
15.5	15.0	9.5	9.0	6.5	10.0
15.5	15.0	9.5	9.5	3.0	8.5
15.5	15.0	9.5	12.0	12.5	4.0
15.5	15.0	11.5	9.0	11.5	7.0
15.5	15.0	11.5	10.5	3.0	13.5
15.5	15.0	11.5	13.0	13.5	3.0
15.5	15.0	12.5	9.0	4.5	14.0
15.5	15.0	12.5	11.0	5.5	11.0
15.5	15.5	7.0	4.5	3.5	15.0
15.5	15.5	11.0	10.5	1.5	15.0
15.5	15.5	11.0	10.5	7.5	9.0
15.5	15.5	11.0	11.0	9.0	7.5
15.5	15.5	15.0	10.0	6.0	13.5
16.0	9.0	8.0	2.5	8.5	3.5
16.0	10.0	7.0	4.0	9.0	9.0
16.0	10.5	7.5	4.0	8.5	8.5
16.0	10.5	10.5	6.5	9.0	8.0
16.0	11.0	7.0	2.0	8.0	10.0
16.0	11.0	8.0	4.0	11.0	10.0
16.0	11.0	10.0	4.0	11.0	8.0
16.0	11.0	10.0	6.5	8.5	8.5
16.0	11.0	11.0	7.5	10.5	6.5
16.0	11.5	7.5	5.0	11.5	10.5
16.0	11.5	10.5	5.0	11.5	7.5
16.0	12.0	5.0	5.0	9.0	9.0
16.0	12.0	5.0	3.0	11.0	11.0
16.0	12.0	9.0	4.0	10.0	9.0
16.0	12.0	9.0	6.0	11.0	7.0
16.0	12.0	12.0	9.0	11.0	6.0
16.0	12.5	4.5	9.5	12.0	12.0
16.0	12.5	5.5	5.0	8.5	3.5
16.0	12.5	8.5	6.0	10.5	7.5
16.0	12.5	11.5	4.0	11.5	9.5
16.0	13.0	5.0	4.5	8.5	11.5
16.0	13.0	5.0	8.5	12.5	11.5
16.0	13.0	9.0	1.0	9.0	13.0
16.0	13.0	9.0	5.0	10.0	9.0
16.0	13.0	9.0	7.0	11.0	7.0
16.0	13.0	9.0	7.5	8.5	8.5
16.0	13.0	11.0	4.0	11.0	10.0
16.0	13.0	13.0	10.0	9.0	8.0
16.0	13.5	12.5	10.0	8.5	8.5
16.0	13.5	13.5	11.5	13.0	4.0
16.0	14.0	3.0	9.0	11.0	11.0
16.0	14.0	4.0	8.0	11.0	13.0
16.0	14.0	6.0	4.5	7.5	10.5
16.0	14.0	13.0	9.0	13.0	6.0
16.0	14.5	3.5	10.0	12.5	14.5
16.0	14.5	4.5	6.0	9.5	14.5
16.0	14.5	7.5	8.0	8.5	8.5
16.0	14.5	9.5	6.0	4.5	14.5

Table III (continued)

j_1	j_2	j_3	ℓ_1	ℓ_2	ℓ_3
16.0	14.5	9.5	9.0	8.5	3.5
16.0	14.5	12.5	10.0	3.5	14.5
16.0	15.0	2.0	14.0	15.0	15.0
16.0	15.0	4.0	4.0	7.0	15.0
16.0	15.0	7.0	4.0	4.0	15.0
16.0	15.0	15.0	12.5	9.5	7.5
16.0	15.0	15.0	14.0	15.0	2.0
16.0	15.5	2.5	4.0	5.5	15.5
16.0	15.5	5.5	4.0	2.5	15.5
16.0	15.5	11.5	5.0	7.5	14.5
16.0	15.5	11.5	11.0	12.5	5.5
16.0	15.5	14.5	11.0	13.5	5.5
16.0	15.5	15.5	13.5	12.0	5.0
16.0	16.0	8.0	6.5	2.5	15.5
16.0	16.0	8.0	9.5	3.5	3.5
16.0	16.0	11.0	8.0	4.0	15.0
16.0	16.0	14.0	10.5	4.5	14.5
16.0	16.0	14.0	12.5	8.5	8.5
16.0	16.0	16.0	14.5	13.5	3.5
16.5	10.5	7.0	2.5	7.5	10.0
16.5	11.0	9.5	2.5	11.0	10.5
16.5	11.0	10.5	2.5	11.0	9.5
16.5	11.5	9.0	5.0	11.0	7.5
16.5	11.5	9.0	6.5	10.5	7.0
16.5	11.5	10.0	2.5	10.5	10.0
16.5	12.0	8.5	5.0	10.5	8.0
16.5	12.0	8.5	6.5	10.0	7.5
16.5	12.0	9.5	6.5	7.0	10.5
16.5	12.5	5.0	3.0	7.0	10.5
16.5	12.5	5.0	5.0	8.0	11.5
16.5	12.5	5.0	9.0	12.0	3.5
16.5	12.5	5.0	9.0	12.0	11.5
16.5	12.5	6.0	3.5	8.5	11.0
16.5	12.5	6.0	6.0	11.0	10.5
16.5	12.5	9.0	6.5	5.5	12.0
16.5	12.5	9.0	6.5	7.5	10.0
16.5	12.5	9.0	7.5	10.5	7.0
16.5	12.5	10.0	2.0	11.0	12.5
16.5	12.5	11.0	2.0	10.0	12.5
16.5	12.5	11.0	4.5	11.5	9.0
16.5	13.0	4.5	9.0	12.5	9.0
16.5	13.0	6.5	3.5	8.0	10.5
16.5	13.0	10.5	2.0	10.5	12.0
16.5	13.0	10.5	4.5	11.0	9.5
16.5	13.0	10.5	8.0	6.5	11.0
16.5	13.0	10.5	8.0	7.5	10.0
16.5	13.0	10.5	3.0	12.5	6.0
16.5	13.0	10.5	3.5	10.0	7.5
16.5	13.5	4.0	8.5	10.5	13.0
16.5	13.5	6.0	5.0	7.0	10.5
16.5	13.5	10.0	8.0	5.0	12.5
16.5	14.0	3.5	2.5	5.0	12.5
16.5	14.0	3.5	6.0	8.5	11.0
16.5	14.0	3.5	8.5	11.0	10.5
16.5	14.0	3.5	10.5	13.0	10.5
16.5	14.0	4.5	5.5	9.0	12.5
16.5	14.0	4.5	7.5	11.0	12.5
16.5	14.0	6.5	8.0	10.5	7.0
16.5	14.0	7.5	3.0	9.5	14.0
16.5	14.0	7.5	6.0	9.5	9.0

j_1	j_2	j_3	ℓ_1	ℓ_2	ℓ_3
16.5	14.0	7.5	6.5	7.0	10.5
16.5	14.0	9.5	3.0	7.5	14.0
16.5	14.0	9.5	8.0	7.5	10.0
16.5	14.0	11.5	10.0	10.5	7.0
16.5	14.0	12.5	4.5	9.0	13.5
16.5	14.0	12.5	7.0	12.5	8.0
16.5	14.5	11.0	10.0	10.0	7.5
16.5	14.5	12.0	10.0	7.0	10.5
16.5	14.5	12.0	10.5	3.5	14.0
16.5	15.0	2.5	2.0	3.5	14.0
16.5	15.0	2.5	7.5	9.0	12.5
16.5	15.0	2.5	9.5	11.0	12.5
16.5	15.0	4.5	6.0	7.5	10.0
16.5	15.0	6.5	1.0	6.5	15.0
16.5	15.0	6.5	9.0	10.5	7.0
16.5	15.0	8.5	3.0	3.5	13.0
16.5	15.0	8.5	7.5	5.0	12.5
16.5	15.0	8.5	3.0	10.5	8.0
16.5	15.0	8.5	11.0	12.5	5.0
16.5	15.0	11.5	2.5	10.0	14.5
16.5	15.0	11.5	10.0	4.5	13.0
16.5	15.0	11.5	10.0	7.5	10.0
16.5	15.0	11.5	11.5	12.0	5.5
16.5	15.0	14.5	12.0	14.5	4.0
16.5	15.5	3.0	3.5	5.5	15.0
16.5	15.5	3.0	4.5	6.5	15.0
16.5	15.5	3.0	8.0	10.0	15.5
16.5	15.5	5.0	4.5	2.5	15.0
16.5	15.5	6.0	5.5	3.5	14.0
16.5	15.5	6.0	5.5	7.5	11.0
16.5	15.5	8.0	7.5	5.5	12.0
16.5	15.5	8.0	8.0	7.0	10.5
16.5	15.5	8.0	9.0	9.0	8.5
16.5	15.5	8.0	11.0	12.0	5.5
16.5	15.5	10.0	3.5	7.5	15.0
16.5	15.5	10.0	4.5	6.5	15.0
16.5	15.5	10.0	8.0	3.0	15.5
16.5	15.5	11.0	2.5	10.5	14.0
16.5	15.5	11.0	4.5	10.5	12.0
16.5	15.5	11.0	7.0	11.0	9.5
16.5	15.5	11.0	10.5	12.5	6.0
16.5	15.5	11.0	13.0	14.0	3.5
16.5	15.5	15.0	5.5	13.5	11.0
16.5	15.5	15.0	13.0	5.0	12.5
16.5	16.0	1.5	7.5	8.0	15.5
16.5	16.0	5.5	5.5	4.0	13.5
16.5	16.0	5.5	8.5	9.0	8.5
16.5	16.0	7.5	7.0	2.5	15.0
16.5	16.0	15.5	14.0	3.5	14.0
16.5	16.5	4.0	4.5	3.5	14.0
16.5	16.5	7.0	8.5	7.5	10.0
16.5	16.5	9.0	8.5	3.5	14.0
16.5	16.5	10.0	11.5	10.5	7.0
16.5	16.5	13.0	7.5	6.5	15.0
16.5	16.5	13.0	11.0	3.0	15.5
16.5	16.5	13.0	13.5	12.5	5.0
16.5	16.5	14.0	12.5	5.5	12.0
16.5	16.5	14.0	12.5	7.5	10.0
16.5	16.5	14.0	14.0	13.0	4.5
16.5	16.5	14.0	15.0	15.0	2.5

Table III (continued)

j_1	j_2	j_3	l_1	l_2	l_3
16.5	16.5	15.0	8.0	8.0	14.5
16.5	16.5	15.0	13.5	10.5	7.0
17.0	10.0	8.0	5.0	10.0	10.0
17.0	10.0	10.0	5.0	10.0	8.0
17.0	10.5	7.5	6.0	10.5	10.5
17.0	10.5	10.5	6.0	10.5	7.5
17.0	11.0	9.0	3.0	11.0	10.0
17.0	11.0	9.0	5.0	9.0	9.0
17.0	11.0	9.0	5.5	10.5	7.5
17.0	11.0	10.0	3.0	11.0	9.0
17.0	11.5	8.5	5.5	10.0	8.0
17.0	11.5	9.5	3.0	10.5	9.5
17.0	11.5	11.5	7.5	10.0	8.0
17.0	12.0	6.0	4.0	8.0	11.0
17.0	12.0	6.0	6.5	10.5	10.5
17.0	12.0	6.0	7.0	12.0	9.0
17.0	12.0	8.0	7.0	12.0	5.0
17.0	12.0	9.0	6.0	9.0	9.0
17.0	12.5	6.5	4.0	7.5	10.5
17.0	12.5	10.5	7.5	9.0	9.0
17.0	12.5	10.5	8.5	12.0	6.0
17.0	12.5	12.5	9.0	10.5	7.5
17.0	13.0	7.0	7.0	11.0	7.0
17.0	13.0	7.0	7.0	13.0	12.0
17.0	13.0	12.0	7.0	13.0	7.0
17.0	13.0	13.0	10.0	12.0	6.0
17.0	13.5	4.5	5.0	8.5	10.5
17.0	13.5	4.5	6.0	8.5	12.5
17.0	13.5	4.5	8.0	10.5	12.5
17.0	13.5	4.5	8.0	11.5	9.5
17.0	13.5	7.5	5.5	6.0	12.0
17.0	13.5	7.5	6.5	9.0	9.0
17.0	14.0	4.0	10.0	13.0	10.0
17.0	14.0	5.0	5.0	8.0	10.0
17.0	14.0	8.0	4.0	11.0	14.0
17.0	14.0	11.0	4.0	8.0	14.0
17.0	14.0	11.0	9.0	9.0	9.0
17.0	14.0	12.0	5.0	12.0	10.0
17.0	14.0	12.0	9.5	7.5	10.5
17.0	14.5	6.5	6.0	11.5	14.5
17.0	14.5	8.5	7.0	4.5	13.5
17.0	14.5	8.5	7.0	5.5	12.5
17.0	14.5	8.5	8.5	10.0	8.0
17.0	14.5	11.5	6.0	6.5	14.5
17.0	14.5	11.5	9.5	8.0	10.0
17.0	14.5	14.5	11.5	9.0	9.0
17.0	14.5	14.5	12.0	12.5	5.5
17.0	14.5	14.5	12.5	14.0	4.0
17.0	15.0	3.0	4.0	5.0	15.0
17.0	15.0	3.0	5.0	6.0	15.0
17.0	15.0	3.0	7.0	9.0	12.0
17.0	15.0	3.0	12.0	14.0	12.0
17.0	15.0	5.0	4.0	3.0	15.0
17.0	15.0	6.0	5.0	3.0	15.0
17.0	15.0	6.0	5.0	4.0	14.0
17.0	15.0	6.0	5.0	10.0	15.0
17.0	15.0	6.0	6.0	7.0	11.0
17.0	15.0	6.0	8.0	10.0	8.0
17.0	15.0	8.0	7.0	6.0	12.0
17.0	15.0	10.0	5.0	6.0	15.0
17.0	15.0	11.0	11.0	12.0	6.0
17.0	15.0	14.0	10.0	14.0	6.0
17.0	15.0	14.0	11.5	7.5	10.5
17.0	15.5	5.5	5.0	4.5	13.5
17.0	15.5	9.5	4.0	9.5	12.5
17.0	15.5	9.5	7.0	10.5	9.5
17.0	15.5	9.5	8.5	3.0	15.0
17.0	15.5	9.5	12.0	13.5	4.5
17.0	15.5	13.5	11.5	6.0	12.0
17.0	16.0	2.0	4.5	5.5	14.5
17.0	16.0	2.0	10.5	11.5	14.5
17.0	16.0	2.0	15.0	16.0	15.0
17.0	16.0	4.0	4.0	4.0	14.0
17.0	16.0	7.0	7.0	6.0	12.0
17.0	16.0	7.0	6.0	8.0	10.0
17.0	16.0	10.0	9.0	4.0	14.0
17.0	16.0	10.0	9.0	5.0	13.0
17.0	16.0	10.0	10.0	9.0	9.0
17.0	16.0	10.0	11.0	11.0	7.0
17.0	16.0	13.0	7.0	7.0	15.0
17.0	16.0	13.0	11.5	4.5	13.5
17.0	16.0	13.0	11.5	8.5	9.5
17.0	16.0	13.0	13.0	13.0	5.0
17.0	16.0	14.0	13.5	13.5	4.5
17.0	16.0	16.0	4.5	14.5	12.5
17.0	16.0	16.0	10.5	14.5	6.5
17.0	16.0	16.0	15.0	16.0	2.0
17.0	16.5	1.5	10.0	10.5	16.5
17.0	16.5	4.5	5.0	4.5	13.5
17.0	16.5	4.5	7.0	7.5	10.5
17.0	16.5	6.5	10.0	10.5	7.5
17.0	16.5	8.5	8.0	4.5	13.5
17.0	16.5	10.5	10.0	1.5	16.5
17.0	16.5	12.5	11.5	3.0	15.0
17.0	16.5	16.5	14.0	10.5	7.5
17.0	17.0	3.0	4.5	4.5	13.5
17.0	17.0	8.0	8.0	5.0	13.0
17.0	17.0	8.0	12.0	12.0	6.0
17.0	17.0	9.0	9.0	6.0	12.0
17.0	17.0	12.0	11.5	1.5	16.5
17.0	17.0	15.0	13.5	4.5	13.5
17.0	17.0	16.0	11.0	6.0	15.0
17.5	13.0	10.5	3.0	12.5	13.0
17.5	13.0	12.5	3.0	10.5	13.0
17.5	13.5	8.0	2.5	9.5	13.0
17.5	13.5	8.0	5.5	12.5	13.0
17.5	14.0	6.5	1.5	7.0	13.5
17.5	14.0	6.5	4.0	9.5	13.0
17.5	14.0	6.5	7.0	12.5	13.0
17.5	14.0	7.5	4.5	11.0	13.5
17.5	14.0	8.5	2.5	9.0	12.5
17.5	14.0	11.5	3.0	11.5	12.0
17.5	14.5	9.0	2.0	10.0	14.5
17.5	14.5	10.0	2.0	9.0	14.5
17.5	14.5	14.0	2.5	12.5	14.0
17.5	15.0	7.5	4.0	8.5	12.0
17.5	15.0	9.5	2.0	9.5	14.0
17.5	15.0	13.5	2.5	13.0	13.5
17.5	15.0	13.5	5.5	13.0	10.5
17.5	15.0	13.5	3.0	13.5	8.0

Table. III (continued)

j_1	j_2	j_3	ℓ_1	ℓ_2	ℓ_3
17.5	15.0	13.5	9.5	14.0	6.5
17.5	15.5	9.0	4.5	9.5	12.0
17.5	15.5	10.0	5.5	10.5	11.0
17.5	15.5	13.0	5.5	12.5	11.0
17.5	15.5	15.0	4.0	12.0	14.5
17.5	16.0	4.5	7.0	10.5	15.0
17.5	16.0	10.5	7.0	4.5	16.0
17.5	16.0	12.5	7.5	6.0	15.5
17.5	16.0	15.5	13.0	15.5	4.0
17.5	16.5	5.0	2.0	6.0	16.5
17.5	16.5	6.0	2.0	5.0	16.5
17.5	16.5	9.0	7.0	10.0	10.5
17.5	16.5	13.0	6.0	8.0	15.5
17.5	16.5	14.0	1.5	13.5	16.0
17.5	16.5	14.0	4.0	13.0	13.5
17.5	16.5	14.0	7.0	13.0	10.5
17.5	16.5	14.0	9.0	6.0	15.5
17.5	16.5	14.0	9.5	13.5	3.0
17.5	16.5	14.0	11.0	14.0	6.5
17.5	17.0	5.5	2.0	5.5	16.0
17.5	17.0	11.5	8.0	11.5	10.0
17.5	17.5	11.0	7.0	5.0	16.5
17.5	17.5	15.0	11.5	4.5	16.0
18.0	10.0	9.0	4.0	10.0	10.0
18.0	10.0	10.0	4.0	10.0	9.0
18.0	10.5	9.5	4.0	9.5	9.5
18.0	11.0	11.0	6.0	10.0	9.0
18.0	11.5	10.5	6.0	9.5	9.5
18.0	12.0	7.0	3.5	9.5	9.5
18.0	12.0	7.0	8.0	12.0	12.0
18.0	12.0	12.0	8.0	12.0	7.0
18.0	12.5	12.5	8.5	11.0	8.0
18.0	13.5	5.5	5.5	10.0	10.0
18.0	13.5	6.5	7.5	13.0	11.0
18.0	13.5	7.5	3.0	9.5	12.5
18.0	14.0	6.0	2.0	7.0	13.0
18.0	14.0	6.0	5.5	9.5	9.5
18.0	14.0	8.0	3.0	9.0	12.0
18.0	14.0	11.0	1.0	11.0	14.0
18.0	14.0	11.0	8.5	9.5	9.5
18.0	14.0	11.0	8.5	13.5	6.5
18.0	14.0	14.0	10.5	10.5	8.5
18.0	14.0	14.0	11.0	13.0	6.0
18.0	14.5	9.5	8.0	9.5	9.5
18.0	15.0	4.0	8.0	11.0	11.0
18.0	15.0	6.0	5.0	10.0	14.0
18.0	15.0	6.0	6.0	11.0	14.0
18.0	15.0	13.0	6.0	13.0	10.0
18.0	15.0	13.0	10.5	9.5	9.5
18.0	15.0	15.0	12.0	12.0	7.0
18.0	15.5	4.5	4.5	8.0	14.0
18.0	15.5	7.5	4.0	10.5	15.5
18.0	15.5	8.5	7.5	11.0	9.0
18.0	15.5	10.5	4.0	7.5	15.5
18.0	15.5	12.5	6.0	12.5	10.5
18.0	15.5	12.5	9.0	13.5	7.5
18.0	15.5	15.5	13.5	15.0	4.0
18.0	16.0	3.0	10.5	12.5	12.5
18.0	16.0	5.0	2.5	6.5	15.5
18.0	16.0	5.0	6.5	10.5	15.5

j_1	j_2	j_3	ℓ_1	ℓ_2	ℓ_3
18.0	16.0	5.0	9.0	13.0	16.0
18.0	16.0	7.0	3.0	9.0	16.0
18.0	16.0	9.0	3.0	7.0	16.0
18.0	16.0	9.0	8.5	11.5	8.5
18.0	16.0	13.0	2.5	11.5	15.5
18.0	16.0	13.0	6.5	7.5	15.5
18.0	16.0	13.0	9.0	5.0	16.0
18.0	16.0	15.0	5.0	14.0	12.0
18.0	16.0	15.0	6.0	14.0	11.0
18.0	16.0	15.0	11.0	15.0	6.0
18.0	16.0	16.0	13.0	10.0	9.0
18.0	16.5	2.5	12.5	14.0	14.0
18.0	16.5	3.5	7.0	9.5	15.5
18.0	16.5	5.5	2.5	6.0	15.0
18.0	16.5	5.5	4.5	7.0	13.0
18.0	16.5	5.5	8.0	9.5	9.5
18.0	16.5	7.5	5.0	8.5	12.5
18.0	16.5	12.5	2.5	12.0	15.0
18.0	16.5	13.5	10.5	14.0	7.0
18.0	16.5	14.5	5.0	13.5	12.5
18.0	16.5	15.5	13.0	9.5	9.5
18.0	17.0	2.0	16.0	17.0	17.0
18.0	17.0	3.0	9.0	11.0	17.0
18.0	17.0	4.0	5.0	3.0	17.0
18.0	17.0	8.0	3.0	8.0	15.0
18.0	17.0	8.0	5.0	4.0	17.0
18.0	17.0	8.0	6.0	9.0	12.0
18.0	17.0	9.0	4.0	9.0	14.0
18.0	17.0	11.0	9.0	3.0	17.0
18.0	17.0	11.0	9.0	12.0	9.0
18.0	17.0	14.0	6.0	13.0	12.0
18.0	17.0	15.0	9.0	14.0	9.0
18.0	17.0	15.0	13.5	15.5	4.5
18.0	17.0	17.0	14.5	12.5	6.5
18.0	17.0	17.0	16.0	17.0	2.0
18.0	17.5	10.5	11.0	9.5	9.5
18.0	17.5	12.5	12.0	9.5	9.5
18.0	18.0	11.0	6.0	6.0	17.0
18.0	18.0	12.0	9.0	4.0	17.0
18.0	18.0	14.0	12.0	3.0	17.0
18.0	18.0	16.0	10.0	7.0	16.0
18.0	18.0	18.0	15.5	11.5	7.5
18.0	18.0	18.0	16.0	14.0	5.0
18.5	12.5	8.0	4.0	11.0	10.5
18.5	13.0	6.5	3.5	9.0	10.5
18.5	13.0	6.5	5.0	8.5	13.0
18.5	13.0	6.5	7.5	13.0	8.5
18.5	13.0	6.5	8.0	11.5	13.0
18.5	13.0	6.5	9.0	12.5	11.0
18.5	13.0	8.5	4.0	10.5	10.0
18.5	13.0	8.5	5.0	6.5	13.0
18.5	13.0	8.5	7.5	13.0	6.5
18.5	13.0	11.5	9.0	6.5	13.0
18.5	13.5	6.0	2.5	6.5	13.0
18.5	13.5	11.0	9.0	13.0	6.5
18.5	14.0	6.5	6.5	12.0	11.5
18.5	14.0	7.5	5.0	7.5	12.0
18.5	14.0	7.5	7.5	12.0	7.5
18.5	14.0	13.5	4.0	13.5	11.0
18.5	14.0	13.5	10.5	13.0	6.5

Table.III(continued)

j_1	j_2	j_3	l_1	l_2	l_3
18.5	14.5	6.0	7.5	12.5	12.0
18.5	14.5	10.0	7.5	6.5	13.0
18.5	15.0	4.5	3.0	6.5	13.0
18.5	15.0	4.5	5.0	7.5	14.0
18.5	15.0	7.5	2.5	9.0	14.5
18.5	15.0	8.5	6.5	6.0	13.5
18.5	15.0	8.5	8.0	10.5	9.0
18.5	15.0	8.5	10.0	13.5	6.0
18.5	15.0	10.5	1.0	10.5	15.0
18.5	15.0	12.5	4.0	12.5	12.0
18.5	15.5	5.0	6.0	10.0	13.5
18.5	15.5	5.0	10.0	14.0	13.5
18.5	15.5	7.0	3.5	9.5	15.0
18.5	15.5	7.0	4.5	10.5	15.0
18.5	15.5	7.0	8.0	14.0	15.5
18.5	15.5	8.0	2.5	8.5	14.0
18.5	15.5	8.0	6.5	6.5	13.0
18.5	15.5	8.0	6.5	10.5	10.0
18.5	15.5	8.0	10.0	13.0	6.5
18.5	15.5	9.0	7.5	7.5	12.0
18.5	15.5	9.0	8.0	9.0	10.5
18.5	15.5	9.0	9.0	11.0	8.5
18.5	15.5	9.0	11.0	14.0	5.5
18.5	15.5	13.0	7.5	13.5	9.0
18.5	15.5	14.0	3.5	11.5	15.0
18.5	15.5	14.0	4.5	10.5	15.0
18.5	15.5	14.0	8.0	7.0	15.5
18.5	15.5	14.0	12.0	13.0	6.5
18.5	16.0	3.5	7.5	9.0	15.5
18.5	16.0	5.5	5.0	6.5	13.0
18.5	16.0	9.5	8.0	4.5	15.0
18.5	16.0	14.5	9.0	14.5	8.0
18.5	16.0	14.5	12.0	6.5	13.0
18.5	16.0	15.5	12.5	9.0	10.5
18.5	16.5	4.0	3.0	6.0	15.5
18.5	16.5	4.0	6.5	9.5	15.0
18.5	16.5	4.0	7.5	10.5	15.0
18.5	16.5	4.0	11.0	14.0	15.5
18.5	16.5	6.0	6.0	11.0	16.5
18.5	16.5	8.0	1.0	8.0	16.5
18.5	16.5	8.0	3.5	8.5	14.0
18.5	16.5	8.0	7.5	10.5	10.0
18.5	16.5	8.0	11.0	13.0	6.5
18.5	16.5	11.0	6.0	6.0	16.5
18.5	16.5	11.0	9.5	6.5	13.0
18.5	16.5	11.0	10.5	13.5	7.0
18.5	16.5	12.0	7.5	12.5	10.0
18.5	16.5	13.0	3.5	12.5	14.0
18.5	16.5	15.0	6.0	10.0	15.5
18.5	16.5	15.0	12.5	7.5	12.0
18.5	16.5	15.0	12.5	9.5	10.0
18.5	16.5	15.0	14.0	15.0	4.5
18.5	17.0	2.5	15.0	16.5	15.0
18.5	17.0	3.5	10.5	13.0	16.5
18.5	17.0	4.5	3.0	5.5	15.0
18.5	17.0	6.5	6.0	8.5	12.0
18.5	17.0	8.5	4.5	9.0	13.5
18.5	17.0	10.5	9.5	3.0	15.5
18.5	17.0	10.5	9.5	7.0	12.5
18.5	17.0	10.5	10.5	10.0	9.5
18.5	17.0	10.5	10.5	13.0	7.5
18.5	17.0	10.5	13.5	15.0	4.5
18.5	17.0	12.5	4.5	12.0	13.5
18.5	17.0	12.5	12.0	14.5	6.0
18.5	17.0	14.5	12.5	6.0	13.5
18.5	17.0	16.5	3.0	15.5	15.0
18.5	17.0	16.5	6.5	15.0	11.5
18.5	17.0	16.5	7.5	15.0	10.5
18.5	17.0	16.5	11.0	15.5	7.0
18.5	17.0	16.5	14.0	6.5	13.0
18.5	17.0	16.5	14.0	16.5	4.0
18.5	17.5	2.0	8.0	9.0	15.5
18.5	17.5	2.0	14.0	15.0	16.5
18.5	17.5	11.0	10.0	6.0	13.5
18.5	17.5	14.0	12.5	4.5	15.0
18.5	18.0	1.5	11.0	11.5	18.0
18.5	18.0	2.5	5.0	6.5	18.0
18.5	18.0	6.5	5.0	2.5	18.0
18.5	18.0	7.5	8.0	6.5	13.0
18.5	18.0	9.5	3.5	7.0	17.5
18.5	18.0	10.5	10.0	6.5	13.0
18.5	18.0	11.5	11.0	1.5	18.0
18.5	18.0	11.5	12.0	10.5	9.0
18.5	18.0	13.5	12.5	3.0	16.5
18.5	18.0	13.5	12.5	9.0	10.5
18.5	18.0	13.5	13.5	12.0	7.5
18.5	18.5	6.0	7.5	6.5	13.0
18.5	18.5	9.0	7.5	2.5	18.0
18.5	18.5	12.0	12.0	9.0	10.5
18.5	18.5	13.0	12.0	6.0	13.5
18.5	18.5	13.0	12.5	1.5	18.0
18.5	18.5	13.0	14.5	13.5	6.0
18.5	18.5	15.0	13.5	6.5	13.0
18.5	18.5	16.0	9.0	8.0	16.5
18.5	18.5	17.0	12.0	6.0	16.5

Table. IV. POLYNOMIAL ZEROS OF DEGREE 2 of the 6-j coefficient

j_1	j_2	j_3	ℓ_1	ℓ_2	ℓ_3
6.0	6.0	3.0	6.0	5.0	6.0
6.0	6.0	5.0	6.0	3.0	6.0
6.0	6.0	6.0	6.0	5.0	3.0
6.5	6.0	5.5	5.5	3.0	5.5
7.0	6.0	4.0	4.0	6.0	5.0
7.0	6.0	5.0	4.0	6.0	4.0
7.0	6.5	4.5	4.0	5.5	4.5
7.5	5.5	4.0	4.5	5.5	5.0
7.5	5.5	5.0	4.5	5.5	4.0
7.5	6.0	4.5	4.5	5.0	4.5
8.0	8.0	3.0	6.5	5.5	7.5
8.5	7.5	3.0	6.0	6.0	7.5
8.5	7.5	6.0	6.0	3.0	7.5
8.5	8.0	2.5	4.0	3.5	9.0
8.5	8.0	3.5	4.0	2.5	8.0
8.5	8.5	3.0	4.0	3.0	7.5
9.0	8.0	3.0	3.5	3.5	7.5
9.0	8.0	4.0	4.5	6.5	6.5
9.0	8.0	8.0	7.5	5.5	5.5
9.0	8.5	4.5	4.5	6.0	6.0
9.0	9.0	5.0	3.5	3.5	7.5
9.0	9.0	5.0	7.5	7.5	3.5
9.0	9.0	8.0	8.5	7.5	3.5
9.5	7.5	4.0	5.0	6.0	6.5
9.5	8.0	4.5	5.0	5.5	6.0
9.5	8.0	7.5	7.0	5.5	6.0
9.5	8.5	8.0	8.0	8.0	3.5
9.5	9.5	9.0	9.0	7.0	4.5
10.5	9.0	6.5	6.0	8.5	5.0
10.5	9.0	8.5	8.0	4.5	8.0
10.5	9.5	6.0	6.0	8.0	5.5
10.5	9.5	8.0	6.0	9.0	5.5
10.5	10.5	2.0	5.0	5.0	8.5
10.5	10.5	7.0	8.0	6.0	6.5
11.0	8.5	6.5	6.5	8.0	5.0
11.0	9.0	6.0	6.5	7.5	5.5
11.0	10.5	2.5	4.5	5.0	8.0
11.5	8.5	8.0	7.0	8.0	5.5
11.5	9.5	7.0	7.0	7.0	6.5
11.5	11.0	2.5	8.0	8.5	8.0
12.5	11.0	3.5	7.0	8.5	7.0
12.5	11.5	4.0	7.0	8.0	6.5
12.5	12.0	7.5	3.5	9.0	11.5
12.5	12.0	8.5	2.5	9.0	11.5
12.5	12.5	8.0	8.5	3.5	11.0
13.0	12.0	9.0	5.0	12.0	12.0
13.0	12.0	12.0	5.0	12.0	9.0
13.5	12.5	3.0	11.0	12.0	8.5
13.5	12.5	5.0	9.0	12.0	11.5
13.5	13.0	7.5	6.0	11.5	13.0
13.5	13.0	10.5	10.5	5.0	10.5
13.5	13.0	11.5	6.0	7.5	13.0
14.0	12.0	6.0	5.0	9.0	10.0
14.0	12.5	6.5	5.0	8.5	9.5
14.0	13.0	7.0	6.5	11.5	12.5
14.5	11.5	5.0	10.0	11.0	11.5
14.5	11.5	11.0	4.5	8.5	10.0
14.5	11.5	11.0	10.0	5.0	11.5
14.5	12.0	7.5	3.5	9.0	10.5

j_1	j_2	j_3	ℓ_1	ℓ_2	ℓ_3
14.5	12.0	7.5	6.5	12.0	10.5
14.5	12.0	10.5	3.5	9.0	10.5
14.5	12.0	10.5	4.5	9.0	9.5
14.5	12.0	10.5	6.5	12.0	7.5
14.5	12.5	6.0	8.0	12.0	10.5
14.5	13.5	9.0	6.5	10.5	9.0
14.5	14.0	13.5	9.0	6.5	11.0
14.5	14.5	3.0	8.5	7.5	13.0
14.5	14.5	8.0	10.0	8.0	8.5
15.0	11.0	6.0	6.0	9.0	10.0
15.0	11.0	11.0	5.0	10.0	8.0
15.0	11.5	6.5	6.0	7.5	9.5
15.0	12.0	6.0	5.0	9.0	9.0
15.0	12.0	10.0	3.0	11.0	11.0
15.0	12.0	10.0	5.0	9.0	9.0
15.0	12.5	4.5	9.5	12.0	7.0
15.0	13.5	5.5	9.5	11.0	6.0
15.0	13.5	9.5	9.5	6.0	11.0
15.0	14.0	3.0	8.0	8.0	13.0
15.0	14.0	9.0	9.5	6.5	10.5
15.0	14.0	13.0	9.5	6.5	10.5
15.0	14.0	13.0	12.5	9.5	7.5
15.0	14.5	12.5	12.5	9.0	8.0
15.0	15.0	12.0	9.5	4.5	12.5
15.5	11.0	10.5	5.5	8.0	9.5
15.5	11.5	6.0	5.5	8.5	9.0
15.5	11.5	6.0	9.0	11.0	10.5
15.5	11.5	10.0	5.5	8.5	9.0
15.5	13.5	8.0	9.0	9.0	8.5
15.5	13.5	13.0	8.0	11.0	7.5
15.5	15.0	11.5	8.0	9.5	9.0
15.5	15.0	11.5	12.5	14.0	4.5
15.5	15.5	7.0	9.5	4.5	15.0
15.5	15.5	8.0	9.5	3.5	15.0
16.0	10.5	7.5	5.0	7.5	10.5
16.0	10.5	7.5	5.0	10.5	10.5
16.0	10.5	7.5	8.0	10.5	10.5
16.0	10.5	10.5	5.0	10.5	7.5
16.0	10.5	10.5	8.0	10.5	7.5
16.0	11.5	8.5	2.5	8.0	11.0
16.0	12.0	9.0	5.0	9.0	9.0
16.0	12.0	9.0	8.0	9.0	9.0
16.0	12.5	9.5	8.5	7.0	11.0
16.0	13.0	9.0	8.5	7.5	10.5
16.0	13.0	13.0	8.0	10.5	7.5
16.0	13.0	13.0	11.5	10.5	7.5
16.0	14.0	5.0	10.5	13.5	10.5
16.0	14.5	3.5	10.5	12.0	9.0
16.0	14.5	4.5	6.0	8.5	11.5
16.0	14.5	11.5	8.5	9.0	9.0
16.0	14.5	11.5	11.5	9.0	9.0
16.0	14.5	11.5	13.0	13.5	4.5
16.0	15.0	5.0	6.0	8.0	11.0
16.0	15.0	12.0	12.5	10.5	7.5
16.0	15.0	15.0	11.5	12.5	5.5
16.0	15.5	2.5	8.0	8.5	11.5
16.0	15.5	8.5	9.0	3.5	14.5
16.0	15.5	15.5	11.5	10.0	8.0
16.0	15.5	15.5	15.0	13.5	4.5
16.0	16.0	5.0	10.5	10.5	7.5

Table IV (continued)

j_1	j_2	j_3	ℓ_1	ℓ_2	ℓ_3
16.5	11.0	7.5	3.0	8.5	11.0
16.5	11.0	8.5	3.0	7.5	11.0
16.5	11.5	8.0	3.0	8.0	10.5
16.5	12.0	8.5	4.5	11.0	9.5
16.5	13.0	12.5	11.0	10.5	8.0
16.5	13.5	5.0	11.0	13.0	10.5
16.5	14.0	4.5	6.5	8.0	11.5
16.5	14.0	11.5	11.0	9.5	9.0
16.5	14.5	5.0	6.5	7.5	11.0
16.5	14.5	12.0	12.0	11.0	7.5
16.5	15.0	11.5	12.0	10.5	8.0
16.5	15.5	3.0	7.5	8.5	11.0
16.5	15.5	6.0	5.5	9.5	14.0
16.5	15.5	8.0	8.5	4.5	14.0
16.5	15.5	15.0	11.0	8.0	10.5
16.5	15.5	15.0	14.5	4.5	14.0
16.5	16.0	3.5	7.5	8.0	10.5
16.5	16.0	7.5	11.0	10.5	8.0
16.5	16.0	14.5	9.0	11.5	9.0
16.5	16.0	14.5	11.5	15.0	6.5
16.5	16.5	7.0	8.5	5.5	13.0
16.5	16.5	10.0	8.0	4.0	14.5
16.5	16.5	14.0	11.0	9.0	9.5
16.5	16.5	15.0	15.5	13.5	5.0
17.5	11.0	8.5	5.5	10.0	9.5
17.5	12.5	7.0	7.0	12.0	12.5
17.5	12.5	12.0	7.0	7.0	12.5
17.5	15.0	9.5	7.0	9.5	10.0
17.5	15.0	9.5	10.5	14.0	6.5
17.5	15.0	14.5	10.0	10.5	9.0
17.5	15.5	6.0	5.5	9.5	13.0
17.5	15.5	14.0	10.0	10.0	9.5
17.5	15.5	15.0	14.5	14.5	5.0
17.5	16.0	6.5	5.5	9.0	12.5
17.5	16.0	6.5	5.5	9.0	12.5
17.5	16.0	8.5	10.5	13.0	7.5
17.5	16.0	10.5	7.0	15.5	16.0
17.5	16.0	11.5	6.0	15.5	16.0
17.5	16.0	15.5	6.0	11.5	16.0
17.5	16.0	15.5	7.0	10.5	16.0
17.5	16.0	15.5	10.5	13.0	7.5
17.5	16.5	16.0	15.0	8.0	11.5
17.5	17.0	3.5	14.5	16.0	15.5
18.0	14.0	6.0	7.0	8.0	14.0
18.0	14.0	8.0	7.0	6.0	14.0
18.0	14.5	9.5	11.0	13.5	6.5
18.0	14.5	14.5	13.0	13.5	6.5
18.0	15.0	7.0	7.0	7.0	13.0
18.0	15.0	8.5	11.0	12.5	7.5
18.0	15.5	15.5	11.0	12.5	7.5
18.0	15.5	15.5	11.5	14.0	6.0
18.0	16.0	13.0	10.0	15.0	8.0
18.0	16.0	15.0	7.5	12.5	10.5
18.0	16.0	15.0	7.5	15.5	10.5
18.0	16.0	15.0	10.0	13.0	8.0
18.0	16.5	3.5	15.0	15.5	15.5
18.0	16.5	14.5	7.5	12.0	11.0
18.0	17.5	13.5	13.5	6.0	14.0
18.0	17.5	14.5	9.5	15.0	10.0
18.0	17.5	17.5	12.5	14.0	7.0

j_1	j_2	j_3	ℓ_1	ℓ_2	ℓ_3
18.0	18.0	2.0	15.5	15.5	15.5
18.0	18.0	11.0	13.0	10.0	10.0
18.0	18.0	13.0	11.0	10.0	10.0
18.0	18.0	13.0	13.5	7.5	12.5
18.5	14.5	6.0	5.0	10.0	14.5
18.5	14.5	6.0	6.5	8.5	13.0
18.5	14.5	10.0	6.0	6.0	14.5
18.5	15.0	6.5	6.5	8.0	12.5
18.5	15.0	12.5	9.0	12.5	8.0
18.5	15.5	14.0	6.0	15.0	11.5
18.5	15.5	15.0	10.5	12.5	8.0
18.5	16.0	9.5	8.0	15.5	15.0
18.5	16.0	9.5	8.0	15.5	15.0
18.5	16.0	11.5	9.0	11.5	9.0
18.5	16.5	8.0	6.0	8.0	12.5
18.5	16.5	13.0	6.0	14.0	12.5
18.5	16.5	15.0	14.0	8.0	12.5
18.5	17.5	13.0	10.5	10.5	10.0
18.5	17.5	13.0	13.0	7.0	13.5
18.5	17.5	17.0	13.0	7.0	13.5
18.5	18.0	13.5	14.0	9.5	11.0
18.5	18.0	15.5	6.0	11.5	15.0

Table V. Polynomial zeros of degree 3, 4 and 5 of the 6-j coefficient.

POLYNOMIAL ZEROS OF DEGREE 3

j_1	j_2	j_3	l_1	l_2	l_3
12.0	10.5	10.5	8.5	10.0	5.0
12.0	12.0	9.0	8.0	4.0	11.0
13.0	10.5	9.5	7.5	10.0	6.0
13.0	12.0	8.0	7.5	8.5	7.5
14.0	11.0	6.0	6.0	9.0	10.0
14.0	12.0	5.0	9.0	11.0	12.0
14.0	12.0	7.0	6.0	8.0	9.0
14.0	12.0	11.0	9.0	5.0	12.0
15.0	12.0	6.0	8.0	11.0	11.0
15.0	13.5	13.5	13.5	10.0	8.0
15.0	14.0	8.0	8.0	9.0	9.0
15.0	14.5	12.5	13.5	9.0	9.0
15.5	14.5	12.0	10.5	4.5	14.0
15.5	15.5	15.0	12.0	6.0	13.5
16.0	13.5	12.5	12.5	8.0	11.0
16.0	14.5	11.5	12.5	9.0	10.0
16.0	15.5	14.5	12.5	6.0	13.0
17.0	12.5	12.5	11.5	11.0	9.0
17.0	13.5	11.5	11.5	10.0	10.0
17.0	16.5	11.5	7.0	15.5	15.5
17.5	15.5	15.0	11.5	14.5	7.0
18.0	14.0	7.0	8.0	12.0	12.0
18.0	15.0	15.0	12.0	14.0	7.0
18.0	15.5	8.5	8.0	10.5	10.5
18.0	17.0	13.0	14.0	7.0	14.0
18.0	17.0	15.0	6.5	11.5	15.5
18.0	18.0	14.0	12.5	6.5	14.5
18.5	15.0	12.5	9.0	13.5	9.0
18.5	15.5	14.0	10.5	14.5	8.0
18.5	16.0	11.5	9.0	12.5	10.0
18.5	16.5	10.0	8.5	15.5	14.0
18.5	18.0	11.5	8.5	14.0	12.5
18.5	18.0	11.5	10.5	12.0	10.5

POLYNOMIAL ZEROS OF DEGREE 4

16.0	15.0	15.0	11.5	14.5	7.5
17.0	15.0	14.0	12.5	7.5	13.5
17.5	15.0	13.5	10.0	14.5	9.0
17.5	16.0	15.5	7.5	12.0	15.5
17.5	17.0	11.5	10.0	12.5	11.0
17.5	17.5	14.0	13.5	7.5	14.0
18.5	14.0	13.5	11.0	13.5	9.0
18.5	16.0	11.5	11.0	11.5	11.0
18.5	18.0	15.5	8.0	11.5	15.0

POLYNOMIAL ZEROS OF DEGREE 5

14.0	13.5	12.5	12.5	10.0	9.0
15.0	12.5	12.5	11.5	11.0	9.0
15.0	13.5	11.5	11.5	10.0	10.0

Table VI Generic polynomial zeros of the 6-j coefficient $\begin{Bmatrix} j_1 & j_2 & j_3 \\ \ell_1 & \ell_2 & \ell_3 \end{Bmatrix}$ for which explanations have been given.

j_1	j_2	j_3	ℓ_1	ℓ_2	ℓ_3	Explanation	Ref.	n
2	2	2	1.5	1.5	1.5	quasi-spin[+]	2, 3	1
5	5	3	3	3	3	$R_7 \supset G_2 \supset SO_3$	2, 3	1
5	5	2	2	2	4	g-shell	5	1
9	6	4	2	5	5	f. p. c.[++]	5	1
11	11	3	4	4	8	$SO_{26} \supset F_4 \supset SO_3$	6a	1
11	11	9	8	4	8		6a	1
3	2	2	1	2	2	$F_4 \supset SO_3 \otimes SO_3$	6b	1
7	4.5	4.5	2.5	4	4		6b	1
11	8	6	4	4	8	$E_6 \supset SO_3$	6c	1
7	6	5	4	6	4		6c	2
6	6	6	5	4	3		6c	1
9	6	4	2	5	5		6c	1

[+] Regge symmetries do not give rise to any other 6-j coefficient.

[++] $\begin{Bmatrix} 5 & 5 & 2 \\ 2 & 2 & 4 \end{Bmatrix} = \begin{Bmatrix} 5 & 4.5 & 1.5 \\ 2 & 2.5 & 4.5 \end{Bmatrix} = \begin{Bmatrix} 5 & 4.5 & 2.5 \\ 2 & 1.5 & 4.5 \end{Bmatrix}$ and

$\begin{Bmatrix} 9 & 6 & 4 \\ 2 & 5 & 5 \end{Bmatrix} = \begin{Bmatrix} 8 & 6 & 5 \\ 1 & 5 & 6 \end{Bmatrix}$, follow from the Regge symmetries.

Note: The 24 6-j coefficient zeros which follow from the 9 other generic zeros in this Table can be found in Table I of ref. 6c.