COSMIC-RAY DIURNAL ANISOTROPY 1937-1973

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From 1937 to 1973 the annual means of the diurnal anisotropy are shown to result from the superposition of two distinct separate components. One component has its maximum (or minimun) in the asymptotic direction 128° east of the sun and exhibits a well-defined quasi-periodic variation with a period of two solar cycles and amplitude of 0.07%. The direction of this component reverses when the sun's polar field reverses. The other component has its maximum 90° east of the sun, is well correlated with magnetic activity, and exhibits a solar cycle variation with amplitude about 0.05% about a mean of 0.12%. These results were derived from ion-chamber data at three stations. A comparison of the diurnal anisotropy from these data and from Simpson's IGY neutron monitor data at Huancayo shows very satisfactory agreement indicating that the so-called diurnal temperature-effect was thoroughly eliminated from the ion-chamber data.