

CIMI Equatorial Pressure Anisotropy

The CIMI (Comprehensive Inner Magnetosphere-Ionosphere) model [Fok *et al.*, 2014] calculates ring current and radiation belt particle phase space densities (PSD) as a function of two spatial coordinates and two adiabatic invariants. The CIMI PSD is then converted to the particle flux in energy and equatorial pitch angle. We define pitch-angle anisotropy in the same way as Chen *et al.* [1998]. For the detailed definition see also Info for the TWINS inverted equatorial Pressure Anisotropy.

The figure shows CIMI equatorial pressure anisotropy. The format of the figure is similar to that for the TWINS inverted distribution: anisotropy of -1 corresponds to pure field-aligned distribution, pure perpendicular distribution gives anisotropy of 1, and isotropic distribution corresponds to 0. The peak of the ion flux is marked by a black star. Note that the definition for anisotropy is meaningful only in the regions of non-zero particle flux.

References:

- Chen, M. W., J. L. Roeder, J. F. Fennell, L. R. Lyons, and M. Schulz (1998), Simulations of ring current proton pitch angle distributions, *J. Geophys. Res.*, *103*(A1), 165–178, doi:10.1029/97JA02633.
- Fok, M.-C., N. Y. Buzulukova, S.-H. Chen, A. Glocer, T. Nagai, P. Valek, and J. D. Perez (2014), The Comprehensive Inner Magnetosphere-Ionosphere Model, *J. Geophys. Res. Space Physics*, *119*, 7522–7540, doi:10.1002/2014JA020239.