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# Perpendicular transport in the inner heliosphere: A quick and dirty approach

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In previous studies, particle transport in the inner heliosphere has been regarded as one dimensional along the archimedian field spiral; any perpendicular transport is neglected. We extend Roelof's equation of focused transport for solar energetic particles to accommodate perpendicular transport in the plane of ecliptic. Numerically, this additional term is solved with an implicit Laasonen scheme. As first approximation it is solved for azimuthal instead of perpendicular transport – which is identical in the inner heliosphere where the archimedian field is almost radial. For typical ratios $\kappa_\perp/\kappa_\parallel$ between 0.02 and 0.1 at 1 AU as suggested in non linear guiding center theory and a scaling of $\kappa_\perp$ with $r^2$ as suggested from the random walk of field lines we find that (a) azimuthal spread over some ten degrees occurs within a few hours, (b) the variation of maximum intensities with longitude is comparable to the ones inferred from multi-spacecraft observations, and (c) on a given field line intensity- and anisotropy-time profiles are modified such that fits with the 2D transport model give different combinations of injection profiles and mean free paths. Implications for the interpretation of intensity and anisotropy time profiles observed in interplanetary space and consequences for our understanding of particle propagation and acceleration in space will be discussed.