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Drift Phase Structure as a Diagnostic of Outer Belt Radial Transport

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In the outer radiation belt, quasilinear diffusive radial transport of electrons assumes a superposition of very many tiny radial displacements. Recent test particle simulations have called into question the appropriateness of the quasilinear approximation. Specifically, magnetic impulses and drift-resonant phenomena may not constitute very many, and probably do not constitute tiny, radial displacements. Quasilinear, impulsive, and drift resonant radial transport processes all have different signatures in the drift phase structure of electrons. We present an initial case study of examples of the different categories of drift phase structure, with the aim of eventually performing a statistical characterization: how significant is each kind of transport during a storm, and how does the type of solar wind driver affect the distribution of radial transport mechanisms? We use data from the SCATHA and GOES missions whose orbits provide 100% residence time on the drift shells through which electrons must travel to reach the outer zone from the plasma sheet.