



Dynamics of Uranus' dusty rings

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The dynamics of small (micron and submicron sized) dust particles in planetary rings are of particular interest because, in addition to gravity, they are also sensitive to various other forces, and thus are able to illustrate subtle processes that cannot be probed otherwise. Studying the processes that shape planetary rings comprised of small particles provides important constraints on their sources / sinks, transport processes, as well as clues on the history and evolution of these rings. Here we present preliminary results about the dynamical simulations of Uranus' dusty rings. Our simulations suggest that micron-sized particles in the recently discovered μ ring need to be positively charged to remain confined in the observed region (planet-centric distance of 86,000 to 103,000 km). The ultimate goal of this study is to provide a comprehensive theoretical understanding of the dust environment around Uranus in preparation for in situ dust measurements and dust hazard assessments for future missions.