



SOURCES OF MASS/ENERGY IN PLANETARY RINGS

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EVIDENCE from Saturn's Rings solves riddles of planet formation. Photographs by Cassini and other spacecraft show conditions similar to the birth of our Solar System. There have been several open questions regarding the planets. Most puzzling is the formation of mountain-sized planetesimals from protostellar dust. Power source of the "dynamo" generating planetary magnetic fields was also unknown. Internal heat generated by planets and moons is an additional mystery. These riddles may be explained as singularities in the Solar System's formation. Saturn's Rings are a field of ice in which the tracks of invisible objects may be seen.

It is generally agreed that primordial singularities were created shortly after the Big Bang, and exist in unknown numbers today. Existence of these objects in the Solar System's formation would have seeded formation of planetesimals and even larger bodies. Their hidden presence would explain both planetary magnetic fields and internal heat. They would also explain the Rings' presence and longevity.

The most convincing evidence for singularities would be Hawking radiation. Observations of a polar "hot spot" on Enceladus cannot be explained by old theories of radioactive decay. The most feasible source of such heating in a small body is radiation from a central singularity. Further observations of Ring objects may show more direct evidence.