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Spatial particle distribution of a moon-fed planetary ring

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On July 14th, the Cassini spacecraft detected a vast plume during a close flyby(E11) of Saturn's moon Enceladus. This plume has been found to originate from geyser-like structures on the south pole of the moon which blow out icy particles into Saturn's E-Ring. An analytical model is derived for populating such a dilute ring around a planet from a south-polar source at a moon. We obtain the particle density distribution function generated by a certain initial particle velocity distribution of the source, mimicking the dust-delivery due to Enceladus' geyser vents.