Abstract Submitted
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Dark matter wave solutions of planetary rings CLAUDIA WAGNER, ORVIN WAGNER, Wagner Research Laboratory — To solve ring systems without shepherd moons requires some special assumptions. It is assumed that the planet is layered and the layers are oscillating with dark matter waves, which penetrate the planet's surface with a node at the surface. Velocities above the surface are proportional to the reciprocal of the square root of the dark matter density. The wave amplitude is strong enough to produce a ring 1/2 wavelength above the surface of the planet. For a thick ring we use the outermost radius for calculating the 1/2 wavelength since the lowest frequency is produced by the total layer thickness. I use very approximate wave velocities in each layer so that the added periods of the layer oscillations are equal to (or twice) the total thickness of the oscillating layers in the planet. The composition of the layers is unknown so the result just gives us order of magnitude values. For Saturn the thickest oscillating layer is approximately 4208 km thick. The assumptions are probably fairly good since from previous work the velocity is probably between 1 and 2 m/s. Gaseous planets often have non-oscillating rocky cores, which radii I also calculate. See abstract 1

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