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An Illustrative Model Describing the Refraction of Long Water Waves by a Circular Island

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ABSTRACT

The refraction of small shallow water waves by an idealized circular island is studied in this paper. The island's shoal is modeled by a quartic polynomial in the radial variable. This particular model allows the explicit construction of the rays (wave orthogonals) and the determination of several important features of the wave motion. The various shortcomings of the particular profile are discussed.

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