

MA T H E M A T I C A L PH Y S I C S SE M I N A R

Rutgers University
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The Shape of Uniformly Rotating White Dwarf Stars

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Abstract

The shape of uniformly rotating, self gravitating fluids has occupied the interest of mathematicians since the days of Newton and Maclaurin. Riemann, Jacobi, Riemann and Poincare and Chandrasekhar also made significant contributions to the subject. We study the compressible case of fluids with an equation of state given by that for white dwarfs, that is of a degenerate electron gas. The aim in the lecture is to classify the free boundary of these uniformly rotating masses of compressible, self-gravitating fluids. This is a joint work with Georg Weiss and has already appeared in J. Differential Equations, 253(2012).