ROTATIONALLY SYMMETRIC 1-HARMONIC MAPS FROM D^2 TO S^2

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Abstract. We consider rotationally symmetric 1-harmonic maps from D^2 to S^2 subject to Dirichlet boundary condition. We prove that the corresponding energy – a degenerate non-convex functional with linear growth – admits a unique minimizer, and that the minimizer is smooth in the bulk and continuously differentiable up to the boundary. We also show that, in contrast with 2-harmonic maps, a range of boundary data exists such that the energy admits more than one smooth critical point: more precisely, we prove the existence of a unique (up to scaling and symmetries) global solution to the corresponding ode, which turns out to be oscillating, and characterize the minimizer and the smooth critical points of the energy as monotone, respectively non-monotone, branches of such solution.

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