

Numerical Bifurcation Analysis for differential geometric PDEs

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1. Abstract

We describe how some differential geometric bifurcation problems can be treated with the Matlab continuation and bifurcation toolbox `pde2path`. The setup consists of updating a base manifold in each continuation step, and considering the pertinent PDEs for the normal displacement. Examples treated include some minimal surfaces such as Enneper's surface and a Schwarz-P-family, some non-zero constant mean curvature surfaces such as liquid bridges, and some 4th order biomembrane models.

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