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**Georg K Dolzmann\*** (dolzmann@math.umd.edu), Mathematics Department, University of Maryland, College Park, MD 20742. *A two-dimensional compressible membrane theory as a Gamma-limit of three-dimensional incompressible elasticity.*

We derive a two-dimensional model for thin elastic sheets as a  $\Gamma$ -limit of a three-dimensional nonlinear elastic theory with the constraint of incompressibility. The energy density of the reduced problem is obtained in two steps: first one optimizes locally over out-of-plane deformations, then one passes to the quasiconvex envelope of the resulting energy density. This work extends the results by LeDret and Raoult on smooth and finite-valued energies to the case of incompressible materials. The main difficulty is the construction of a recovery sequence which satisfies pointwise the nonlinear constraint of incompressibility. (Received August 30, 2005)