

1116-49-1750

Roberto Paroni* (rob.paroni@gmail.com), DADU, Palazzo Pou Salit, 33100 Alghero, SS, Italy.

The energy of a Möbius band.

In 1929 Sadowsky gave a constructive proof for the existence of a developable Möbius band and posed the problem of determining the equilibrium configuration of a Möbius strip formed from an unstretchable material. He tackled this latter problem variationally and he deduced the bending energy for a strip whose width is much smaller than the length. This energy, now known as Sadowsky's energy, depends on the curvature and torsion of the centerline of the band and it is singular at the points where the curvature vanishes.

In this talk, we re-examine the derivation of the Sadowsky's energy by means of the theory of Gamma-convergence. We obtain an energy that is never singular and agrees with the classical Sadowsky functional only for "large" curvature of the centerline of the strip.

The talk is based on ongoing joint work with L. Freddi, P. Hornung, and M.G. Mora. (Received September 21, 2015)