Torus Knots Extremizing the Möbius Energy

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Abstract

Using the principle of symmetric criticality [Palais 1979], we construct torus knots and links that extremize the Möbius-invariant energy introduced by O'Hara [1991] and Freedman, He and Wang [1993]. The critical energies are explicitly computable using the calculus of residues, a result obtained in collaboration with Gil Stengle.

Experiments with a discretized version of the Möbius energy—applicable to the study of arbitrary knots and links—are also described, and confirm the results of the analytic calculations.