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*Title: A nonlinear spectrum for the Dirichlet-Laplacian*

**Abstract:** We consider the constrained critical values of the Dirichlet integral on the unit  $L^q$  sphere. This leads to a semilinear eigenvalue-type equation. We focus on some properties of the relevant spectrum and connections with the Lane-Emden equation. We also discuss applications to nonlinear diffusion equations of porous medium type. Some of the results presented are issued from collaborations with Guido De Philippis (Courant Institute), Giovanni Franzina (CNR) and Bruno Volzone (Napoli Parthenope).

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