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The second best constant for the Hardy-Sobolev inequality on manifolds

We consider the second best constant in the Hardy-Sobolev inequality on a Riemannian manifold. More precisely, we are interested with the existence of extremal functions for this inequality. This problem was tackled by Djadli-Druet [1] for Sobolev inequalities. Here, we establish the corresponding result for the singular case. In addition, we perform a blow-up analysis of solutions to Hardy-Sobolev equations of minimizing type. This yields informations on the value of the second best constant in the related Riemannian functional inequality.

References

[1] Zindine Djadli and Olivier Druet, Extremal functions for optimal Sobolev inequalities on compact manifolds, Calc. Var. Partial Differential Equations **12** (2001), no. 1, 58–84.