

On the Legendre-Hardy-Sobolev inequality

Jaeyoung Byeon

Department of Mathematical Sciences

KAIST

291 Daehak-ro, Yuseong-gu, Daejeon 34141, Republic of Korea

byeon@kaist.ac.kr

The very classical Hardy inequality has two types of high dimensional extension, an algebraic Hardy inequality and a geometric Hardy inequality. All most previous works on the Hardy inequalities have been obtained for functions vanishing on the boundary. I would like to introduce some recent studies on Neumann versions of the Hardy inequalities on a bounded domain [2, 4, 1] and their nonlinear versions [3].

References

- [1] J. Byeon, E. Jeon and F. Takahashi, *The Hardy inequality on bounded domains for mean zero functions*, preprint.
- [2] J. Byeon and S. Jin, *The Legendre-Hardy inequality on bounded domains*, Transactions of the American Mathematical Society Series B, **9** (2022), 208–257
- [3] J. Byeon, S. Jin and S. Moon, *The Legendre-Hardy-Sobolev inequality on bounded domains*, preprint
- [4] J. Chabrowski, I. Peral and B. Ruf, *On an eigenvalue problem involving the Hardy potential*, Commun. Contemp. Math.12(2010), no.6, 953–975.