

Euler-Hilbert-Sobolev spaces on homogeneous groups

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Abstract: In this talk we define Euler-Hilbert-Sobolev spaces and obtain embedding results on homogeneous groups using Euler operators, which are homogeneous differential operators of order zero. Sharp remainder terms of L^p and weighted Sobolev and Sobolev-Rellich inequalities on homogeneous groups are given. As consequences, we obtain analogues of the generalised classical Sobolev and Sobolev-Rellich inequalities. We also discuss applications of logarithmic Hardy inequalities to Sobolev-Lorentz-Zygmund spaces.

Keywords: Sobolev inequality, Hardy inequality, weighted Sobolev inequality, Rellich inequality, Euler-Hilbert-Sobolev space, Sobolev-Lorentz-Zygmund space, homogeneous Lie group

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