SOBOLEV SPACES RELATED TO CLASSICAL AND SYMMETRIZED JACOBI EXPANSIONS

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Abstract. We define and study Sobolev spaces associated with Jacobi expansions. We prove that these Sobolev spaces are isomorphic, in the Banach space sense, with potential spaces (for the Jacobi 'Laplacian') of the same order. This is an essential generalization and strengthening of the recent results [1] concerning the special case of ultraspherical expansions, where in addition a restriction on the parameter of type was imposed. We also apply a symmetrization procedure to the setting of Jacobi expansions and study potential spaces in the resulting situation. Moreover, we present some further results and applications, including a variant of Sobolev embedding theorem.

References

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