Unbounded Operators on Interpolation Spaces

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Similar to the classical interpolation theory for bounded operators, we introduce - in general unbounded - operators S_0, S_1, S_Δ and S_Σ. If these operators are bounded, then we obtain the classical interpolation theory (see [Bergh, Löfström 1976]).

We investigate connections of the spectra of S_0, S_1, S_Δ and S_Σ and the spectra of the corresponding induced operators on interpolation spaces.

As an example, we consider ordinary differential operators on L^p-spaces.