

# Some recent developments in Hardy-type inequalities

*Fritz Gesztesy (Baylor University, Waco, TX, USA)*

We intend to give an overview of some recent results on (optimal) Birman–Hardy–Rellich-type inequalities. In particular, we will discuss power-weighted inequalities and some of their logarithmic refinements in all space dimensions  $n \geq 1$ . In dimension one we will present a new perturbative Hardy-type inequality which sheds new light on the origin of Hardy inequalities.

Hardy-type inequalities are a basic tool in the spectral theory of differential operators and we intend to briefly illustrate their relevance.

This is based on various joint work with L. Littlejohn, I. Michael, R. Nichols, and M. M. H. Pang.