

Contribution Title:	HARDY-LIEB-THIRRING INEQUALITIES
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Invited speaker:	Topical session
YRS seminar:	NO

Lieb–Thirring inequalities estimate moments of negative eigenvalues of Schrödinger operators $-\Delta + V$ in terms of integral norms of the potential V . They are a mathematical key ingredient in understanding properties of fermionic many-body systems. We prove that such inequalities for more general operators of the form $T + V$ are, under certain conditions on the ‘kinetic energy’ T , equivalent to Sobolev-type inequalities. This allows us to derive analogues of the classical Lieb–Thirring inequalities when the critical Hardy-weight is subtracted from the Laplacian or from a fractional power of it. As an application we prove stability of relativistic matter in magnetic fields up to the critical value of the nuclear charge.

The talk is based on joint work with E. Lieb and R. Seiringer.