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Sharp Gaussian upper bounds for Schrödinger semigroups on the half-line

**Abstract**

In 1998, V. Liskevich and Y. Semenov showed sharp Gaussian upper bounds for Schrödinger semigroups on  $\mathbb{R}^3$ , where the potential satisfies an integral condition. Using a similar method and assuming a suitable integral condition, we show a sharp Gaussian upper bound for Schrödinger semigroups on the half-line. In this talk, we discuss this Gaussian upper bound and sketch the steps of the proof. Among other things, these steps include a new method of weighted ultracontractive estimates and a clever application of the Phragmen-Lindelöf principle for the proof of kernel estimates, introduced by T. Coulhon and A. Sikora in 2007. This talk consists of joint work with Hendrik Vogt (Bremen).