On some concrete criteria for quantum and stochastic confinement

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In this talk we will present several recent results on criteria ensuring the confinement of a quantum or a stochastic particle to a bounded domain in $\mathbb{R}^n$. These criteria are given in terms of explicit growth and/or decay rates for the diffusion matrix and the drift potential close to the boundary of the domain. As an application of the general method, we will discuss several cases, including some where the background Riemannian manifold (induced by the diffusion matrix) is geodesically incomplete. These results are part of an ongoing joint project with G. Nenciu (IMAR, Bucharest, Romania).