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Pseudomodes: from solving the spin-boson model to finding ground states

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Pseudomodes have grown in popularity in recent years as an intuitive numerical method for solving the general problem of a quantum system coupled to a Gaussian environment. I will summarize the various formulations of pseudomodes that have appeared in the literature, and demonstrate how they can be used to model non-Markovian bosonic environments and the Kondo effect in the single-impurity Anderson model. I will finish with showing how they can be used as a convenient protocol for performing quantum simulation of open quantum systems and, consequently, for acting as engineered environments for dissipative state engineering.

Primary author(s) : LAMBERT, Neill (RIKEN)

Presenter(s) : LAMBERT, Neill (RIKEN)

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