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Exploring transport in coupled quantum dots for quantum reservoir computing

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Information processing and analysis of time series are crucial in many applications but often face constraints such as high computational complexity. Quantum reservoir computing, which combines a reservoir of neuromorphic quantum hardware with a simple neural network, offers a promising solution. By utilizing the high-dimensional space and dynamics of quantum systems, this approach enables the creation of models that can handle more challenging temporal learning tasks.

In this project, we simulate a system of interacting coupled quantum dots connected to electronic leads as a quantum reservoir. We use a Lindblad master equation approach to calculate the dynamics and transport through the systems and evaluate its performance through several benchmark tests.

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