

## **Method for discovering relationships in data by dynamic quantum clustering**

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**Abstract:** Data clustering is provided according to a dynamical framework based on quantum mechanical time evolution of states corresponding to data points. To expedite computations, we can approximate the time-dependent Hamiltonian formalism by a truncated calculation within a set of Gaussian wave-functions (coherent states) centered around the original points. This allows for analytic evaluation of the time evolution of all such states, opening up the possibility of exploration of relationships among data-points through observation of varying dynamical-distances among points and convergence of points into clusters. This formalism may be further supplemented by preprocessing, such as dimensional reduction through singular value decomposition and/or feature filtering.

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