

# What to Interpolate for L2 Optimal Approximation: Reflections on the Past, Present, and Future

*Monday 17 February 2025 17:45 (45 minutes)*

In this talk, we revisit the L2 optimal approximation problem through various formulations and applications, exploring its rich mathematical structure and diverse implications. We begin with the classical case where the optimal approximant is a rational function, highlighting how Hermite interpolation at specific reflected points emerges as the necessary condition for optimality. Building on this foundation, we consider extensions that introduce additional structure to rational approximations and relax certain restrictions, revealing new dimensions of the problem. Throughout, we demonstrate how Hermite interpolation at reflected points serves as a unifying theme across different domains and applications.

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