Functional Analysis and Mathematical Physics Interdepartmental Research Group (FAMP) Colloquium Series

Fall 2020

Talk 12: *From Rainbows to Resurgence: Asymptotics of the Airy Function*

Will Hoffer (University of California, Riverside)

In this talk, we take a modern perspective on the problem of finding the Stokes behavior of the Airy function through Borel resummation of its asymptotic expansion. In particular, we find that an ordinary asymptotic power expansion (when the parameter approaches infinity along the positive real axis) is missing exponentially small terms. Notably, these exponential terms become dominant as the phase of the parameter changes, and this switching on is directly responsible for the Stokes phenomenon. The primary result, then, is that the full analytic behavior of the Airy function resurges from the original expansion on the positive real line. This perspective can be thought of as resurgence analysis on a perturbative approach to the problem.

Friday, December 11, 11:00 AM -12:00 PM (PST), Online via Zoom at
https://fresnostate.zoom.us/j/5233106532