

# The Black Hole Isospectrality Problem

*Wednesday 16 July 2025 17:50 (20 minutes)*

In 1983, Chandrasekhar calculated that the ringdown spectrum of a perturbed black hole (BH) is identical regardless of perturbation type (isospectrality). While this ‘coincidence’ was proven mathematically its physical origin remains mysterious. After the detection of Gravitational waves and BH ringdowns by LIGO (GW150914) this mystery is now directly relevant for BH observations.

In this presentation/ poster I revisit Chandrasekhar’s calculation of isospectrality. I will discuss its relation to other areas of BH physics, and super symmetric quantum mechanics. I will also propose a method for making progress by treating spacetime in the fully extended Kruskal-Szekeres coordinates.

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**Session Classification:** Student Talks