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## Seeds to success: growing heavy black holes in dense star clusters.

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Intermediate mass black holes (IMBHs) serve as a crucial link between stellar-mass black holes, resulting from the death of massive stars, and supermassive black holes residing at the center of galaxies. Yet, we do not fully understand the necessary conditions for IMBH production, raising questions about whether they could constitute a completely distinct category of black holes.

Star clusters represent ideal laboratories to study the formation of IMBHs. In extremely dense clusters, stellar collisions can trigger the rapid assembly of a very massive star, ultimately collapsing to an IMBH. This initial 'seed' can then further grow via repeated mergers with stellar-mass black holes in the cluster.

Understanding the conditions under which IMBH growth proceeds unhindered is fundamental to identifying how IMBHs are produced and, potentially, to investigating their connection to supermassive black hole formation.

In my talk, I will discuss which structural parameters can help identify the optimal clusters for IMBH seeding. Then, I will compare these theoretical predictions with simulations performed with the new population synthesis code B-POP. Finally, I will present a peculiar set of clusters, obtained from our numerical models, nurturing the growth of IMBHs as massive as 10,000 to 100,000 solar masses.

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