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Binary black hole mergers from star clusters

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The LIGO and Virgo interferometers have detected gravitational waves (GW) from several dozens of coalescing binary black holes (BBHs). Several formation channels are able to explain the BBH merger rate, leaving their origin an open question. The dynamical formation of BBHs in dense stellar systems is a promising model and it predicts that a fraction of BBHs have measurable orbital eccentricities, making this a "smoking gun" signal.

The goal of my research is to understanding the dynamical formation of binary black hole mergers in star clusters. In particular, understand the relative contributions of the various pathways that can lead to BBH mergers and their dependence on cluster properties such as initial mass and density.

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