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Merger rates of black hole binaries in globular clusters

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Over the past years we have transitioned into a new era of astronomical observations, that of the detection of gravitational waves originating from the coalescence of binary black holes. However, the origin of the detected events remains enigmatic until today. Interesting are the scenarios which probe their dynamical assembly inside of dense stellar systems of astrophysical importance like the globular clusters. We calculate the binary black hole merger rate from Milky Way globular clusters and the contribution from various binary assembly mechanisms is taken into consideration. A few of these channels are dynamical captures, three body binary induce encounters, hardening of a pair and exchange processes. We develop an exchange model and find it to be an efficient way for binary black holes to form in clusters. We present results with applications to primordial black holes and low mass gap objects as motivated by the recent LIGO-Virgo events.

Is this abstract from experiment?

No

Name of experiment and experimental site

N/A

Is the speaker for that presentation defined?

Yes

Details

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Yes

Primary author: KRITOS, Konstantinos (National Technical University of Athens)

Presenter: KRITOS, Konstantinos (National Technical University of Athens)

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