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On the effects of unresolved binaries on the deduced total mass and stellar mass function of stellar clusters

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One of the most important quantities needed for understanding a stellar cluster's (SC's) formation and evolution is its stellar mass and mass function (MF). However, the measurements of these quantities are complicated by the possible presence of unresolved binaries. This contribution explores the influence of unresolved binaries on the measured SC mass and MF. It also investigates the impact of unresolved binaries on the masses and MFs of the tidal tails of the SC. Depending on the measurement method, unresolved binaries can cause an overestimate of the SC mass of up to 42 % or an underestimate of up to 25 % in the investigated simulated SC. The power-law index of the MF is underestimated by up to 0.2 causing the observer to see a flatter MF. Additionally a positive correlation is found between the velocity dispersion and binary fraction within the tidal tails of a single SC. However, when comparing different SCs it is found that SCs producing tails with a large overall velocity dispersion have tails with a smaller binary fraction. This is important as a larger binary fraction leads to a flatter apparent MF.

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