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Clues on the formation of massive star clusters from stellar rotation

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Using MUSE spectroscopy, we have recently revealed the existence of distinct populations of slowly and fast rotating stars in young (<2 Gyr) massive (10^5 solar masses) star clusters in the Magellanic Clouds. The differences in the stellar angular momenta naturally explain peculiar features observed in the colour-magnitude diagrams of the clusters, such as split main sequences or extended main-sequence turn-offs, without requiring that the clusters experienced extended periods of star formation. However, the origin of the bimodal stellar spin distribution is being still debated, and competing scenarios have been proposed. In this poster, I will present our results and explain their implication for our understanding of the formation of massive star clusters.

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