

## Measuring the rotation rate in clusters with long photometric continuous space light curves

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Understanding the surface rotation of stars is essential to refine our grasp and better constrain the physical processes occurring during the stellar evolution. For solar-like stars in a wide range of their lifetime, surface rotation is indeed an indicator of their age, and it could trace the existence of coupling mechanisms between different layers of the stars, which will shape stellar evolution. Investigating stars in clusters is of major interest due to the assumption of a common age and initial chemical composition. In this work, we will present the surface rotation study of stars belonging to different clusters in an age sequence with continuous spatial photometric data e.g. with Kepler or TESS missions. We will outline the followed methodology and finally we will discuss our results.