



Circularization and Tidal Dissipation in Eclipsing Binary Stars

By Faccioli, Lorenzo

Condition: New. Publisher/Verlag: VDM Verlag Dr. Müller | Results for early type binaries in the Magellanic Clouds from the MACHO project. | This work studies orbital circularization of binary stars past the Main Sequence using two new samples of eclipsing binary stars found in the Magellanic Clouds by the MACHO Project, as well as samples introduced by the OGLE-II project and finds strong evidence of orbit circularization past the Main Sequence phase of stellar evolution, by the almost complete absence of systems with eccentric orbits in the Red Giant part of the Color Magnitude Diagram whereas the Main Sequence exhibits systems with a broad range of eccentricities. This absence allows to robustly conclude that binary stars circularize their orbits either on crossing the Hertzsprung Gap or on ascending the Red Giant Branch when they undergo a sudden and dramatic increase in their dimensions resulting in strong tidal forces that disrupt the orbit. The work then quantifies the effects of tidal interaction and distortions via a thorough study of the Specific Dissipation Function Q , which is generally not well known for binary stars and finds evidence of a low degree of tidal dissipation. | Format: Paperback | Language/Sprache: english | 286 gr | 204 pp.



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