

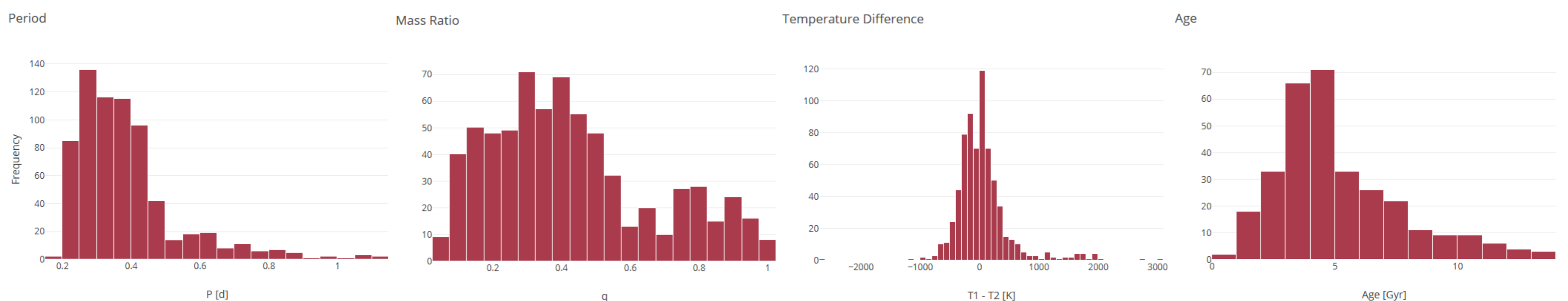
WUMaCat

The largest catalog of individually studied
W UMa stars

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WUMaCat is the largest catalog of individually studied late-type contact binaries known as W UMa stars. These intriguing objects are a favorite target for observations with ground-based telescopes due to their short periods. But they are even more relevant now, in the age of space photometry and large sky surveys, because the **masses and radii of their components can be** (in favorable conditions) **estimated without spectroscopic follow-up.**

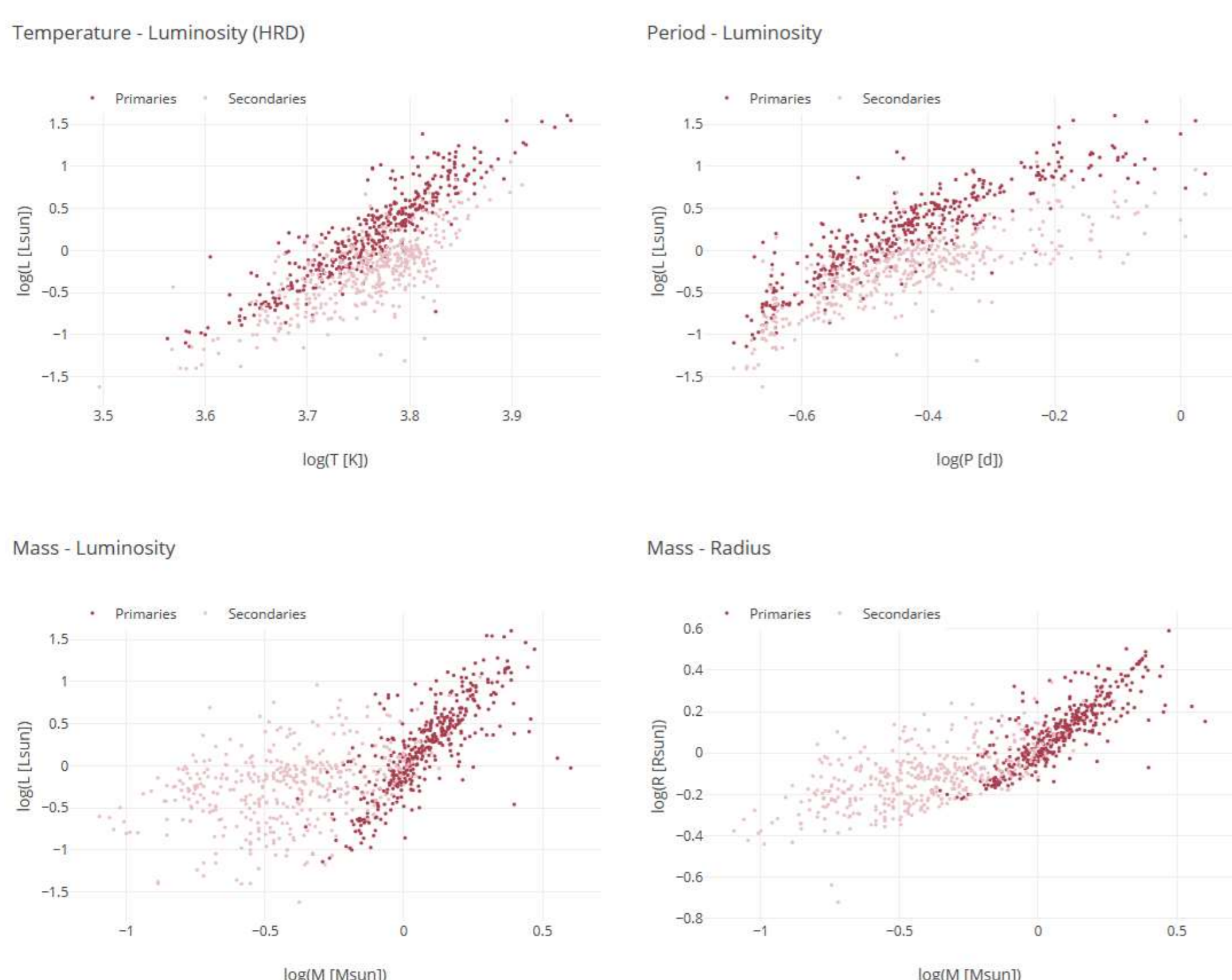
At the time of publication, in April 2021, the catalog contained the orbital and stellar parameters of about 700 W UMa stars, carefully curated from over 450 publications and supplemented by data from LAMOST and Gaia archives. We collect orbital and stellar parameters, descriptive quantities (e.g., eclipse totality, method of mass ratio derivation, presence of spots), details of the photometric solution, etc. We also estimate the ages.



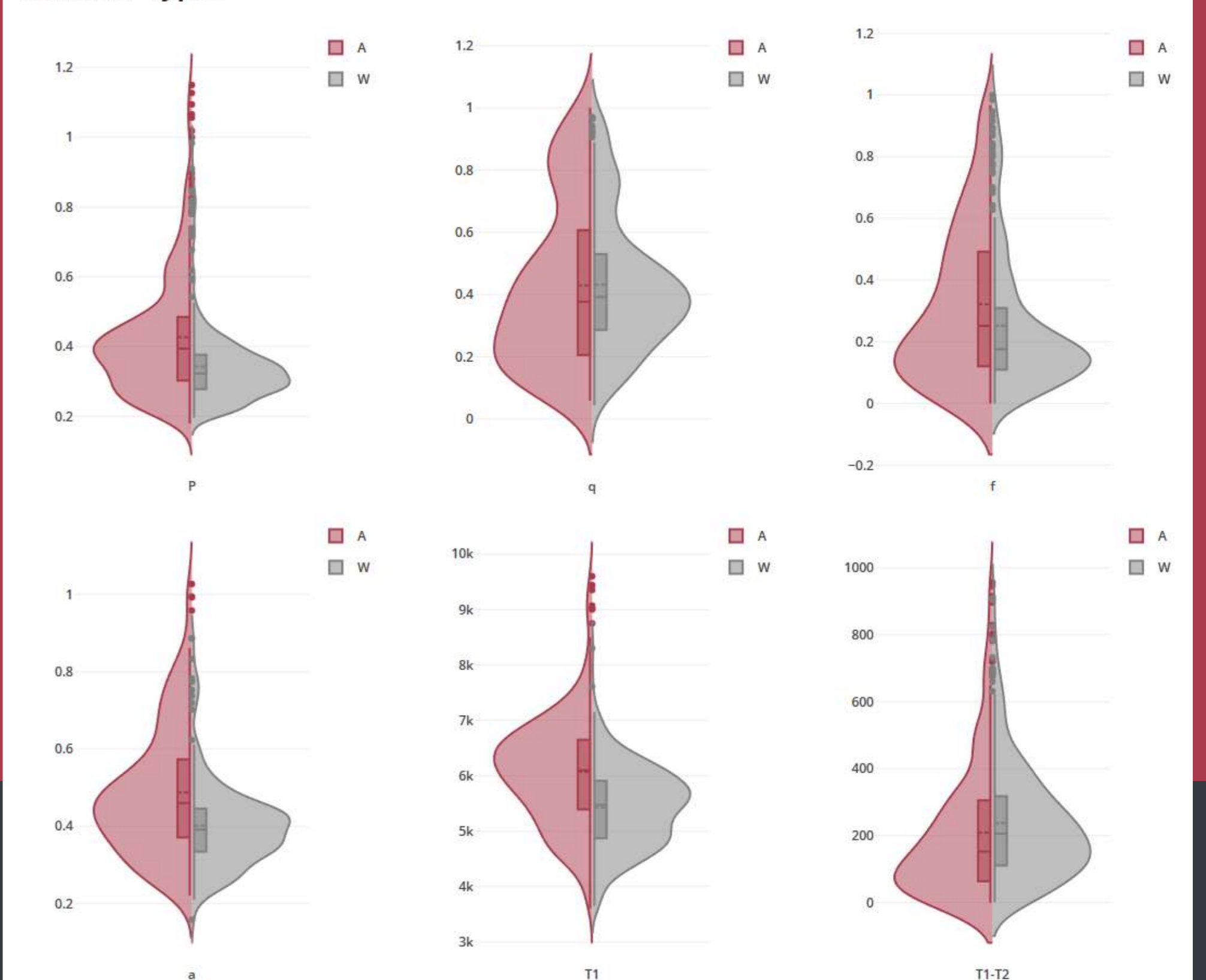
The catalog is being expanded to include more objects and more quantities, especially those that influence the reliability of derived fundamental stellar parameters, such as the method of temperature estimation. We expect to publish a new version next year and proceed with live updates of the catalog from then on.

Another valuable property of W UMa stars is that **they show a period–luminosity relation**, making them viable distance indicators and tracers of old stellar populations.

The theoretical T-L, P-L, M-L and M-R diagrams for W UMa stars



A and W Types



One of the long-standing open questions in the studies of W UMa stars is the nature of the A- and W-type systems. In A-types, the more massive component is also the hotter, and in the W-types, it is the cooler of the two. Some authors suggest that the higher temperature of the secondary in the W-types is due to dark spot coverage of the primary, and not an intrinsic trait. Others believe the A- and W-types make an evolutionary sequence or have evolved from disparate initial conditions.

Read more in Latković et al. 2021 ApJS 254 10