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Título: Mass determination of K2-19b and K2-19c from radial velocities and transit timing variations

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Resumen:

We present FIES@NOT and HARPS-N@TNG radial velocity follow-up observations of K2-19, a compact planetary system hosting three planets, of which the two larger ones, namely K2-19b and K2-19c, are close to the 3:2 mean motion resonance. The masses of these larger planets have previously been derived from transit timing only. An analysis considering only the radial velocity measurements is able to detect only K2-19b, the largest and more massive planet in the system, with a mass of $71.7 \pm 6.3 M_J$. We also used the TRADES code to simultaneously model both our RV measurements and the existing transit-timing measurements. We derived a mass of K2-19b of $59.5 \pm 7.2 - 11.4 M_J$ and of K2-19c of $9.7 \pm 3.9 - 2.0 M_J$. A prior K2-19b mass estimated by Barros et al. (2015), based exclusively on transit timing measurements, is only consistent with our combined TTV and RV analysis, but not with our analysis based purely on RV measurements. K2-19b supports the suspicion that planet masses and densities involving TTV data are systematically lower than those based purely on RV measurements.