K2-161b: A low-density super-neptune on an eccentric orbit

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We report the discovery of K2-161b, which was first identified as a planetary candidate from Kepler K2 photometry of Campaign 14, and whose planetary nature and orbital parameters were then confirmed with precision radial velocities. K2-161b is half as massive as Saturn (MP = 0.179 ± 0.021 MJ), and has a radius of RP = 0.840 ± 0.011 RJ, which translates into a bulk density of ?P = 0.37 ± 0.05 g cm-3. K2-161b transits its slightly evolved G-type host star (M? = 1.105 ± 0.019 M?, R? = 1.669 ± 0.022 R?) every 11.633 64 ± 0.000 10 d and presents a significantly eccentric orbit (e = 0.420 ± 0.034). We estimate a relatively short circularization

time-scale of 1.8 Gyr for the planet, but given the advanced age of the system we expect the planet to be engulfed by its evolving host star in ?1 Gyr before the orbit circularizes. The low density of the planet coupled to the brightness of the host star (J = 9.4) makes this system one of the best candidates known to date in the