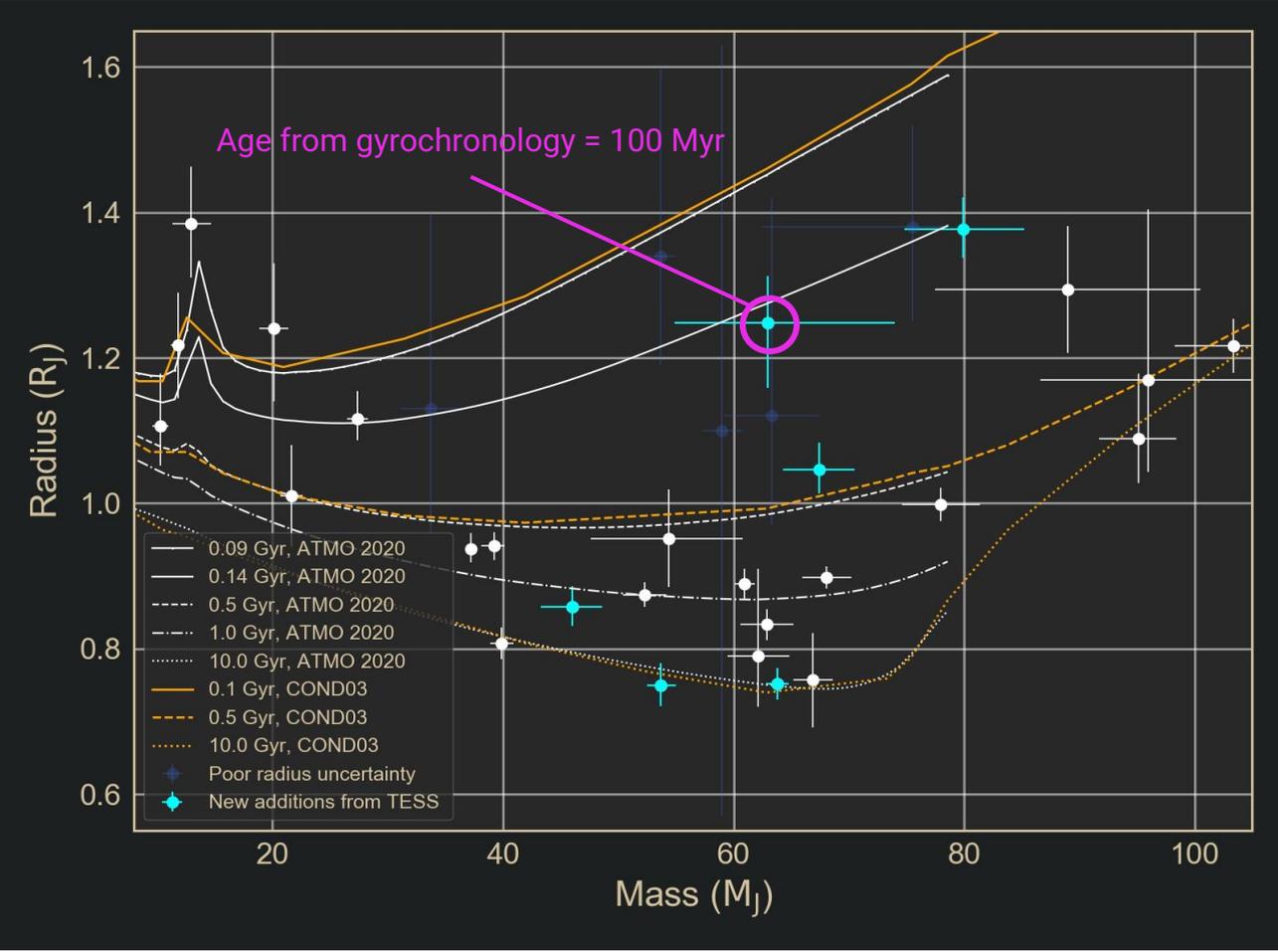


Using transiting brown dwarfs from the TESS mission to explore the substellar mass-radius diagram

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We have made use of TESS, Gaia DR2, and precise radial velocity follow up to measure the mass, radius, and sometimes the age of **6 new transiting brown dwarfs**. The mass, radius, and age of each transiting brown dwarf are used to benchmark **substellar evolutionary models**. Transiting brown dwarfs with **poor radius constraints** are not useful in these benchmarks, but useful in the overall census of these objects. The oldest transiting brown dwarfs trace out the oldest substellar isochrones, but we have very few young brown dwarfs to test younger substellar isochrones.

Host star stats: 4 A-type, 11 F-type, 10 G-dwarfs, 2 K-dwarfs, 6 M-dwarfs

Orbital period range: 0.6 - 167 days

Important pursuits: 1) Apply age-dating techniques like **gyrochronology** to host stars (paper on **TOI-811** coming soon) 2) Examine orbital properties and evolution of brown dwarf systems 3) Find more transiting brown dwarfs around M and K dwarfs (compare to hot Jupiter population) 4) Examine the role of metallicity, assuming it matches the host star

