## Caroline Dorn

University of Zurich

**Presentation Title: A new class of Ca and Al-rich Super-Earths: HD219134 b, 55 Cnc e, and WASP-47 e**

Work Package: WP116 200 Mass-radius Terrestrial Planets

Building blocks of rocky planets form from condensates of cooling proto-planetary disks. Very close to the star, temperatures in the gas disc are initially sufficiently high that most traditionally rocky species are vaporised. Theoretically, the building blocks that form at high temperatures (>1200 K) and in chemical equilibrium, can vary drastically in refractory element composition. A planet formed from these planetesimals can be rich in Ca and Al while being depleted in Fe. Here, we demonstrated that such compositional differences would be reflected in a lower bulk density of 10-20 % compared to Earth-like compositions. We demonstrated that there are at least three Super-Earths, HD219134 b, 55 Cnc e, and WASP-47 e for which Ca and Al-rich and core-free interiors can explain their observed properties. These planets are candidates of a new Super-Earth class whose interior dynamics, outgassing histories, atmosphere evolution, and magnetic fields may be fundamentally different from the majority of Super-Earths.