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The next-generation models for Giant Exoplanet Interiors in the JWST era

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We are at a unique time to study giant exoplanets. With more than 5000 exoplanets found and facilities like JWST that provide unprecedented data on their atmospheres, we moved from an era of discovery to an era of exoplanet characterisation. At the same time, precise measurements from missions like Juno and Cassini lead to a different way of looking at giant planet interior structures, with inhomogeneous interiors that have not been used in exoplanet modelling before. This is an exceptional time to combine the detailed information on the solar system's giant planets with the large amount of data from exoplanets to get a better understanding of planetary physics and a better comprehension of planet formation and evolution. In this talk, I will introduce the first retrieval for exoplanet interiors using next-generation models that are grounded in data from Jupiter and Saturn. These models not only shed light on bulk metallicities but also provide information on core masses and the internal distribution of metals. Using as input planetary masses, radii, atmospheric data provided by JWST and Love numbers (when available), we demonstrate how this integrated methodology leads to the derivation of more realistic interior structures, opening the door to a new generation of interior models for giant exoplanets.