The protoplanetary disk DoAr 44 (Haro 1-16, V2062 Oph) is a pre-transitional disk in the Ophiuchus star-forming region. A large observational dataset is available, including ALMA complex visibilities, VLTI/GRAVITY continuum squared visibilities, closure phases and triple products, VLT/UVES and VLT/X-shooter Hα spectra. Additionaly, spectral-energy distribution measurements were utilized, including observations from ground-based optical observatories, the IRAS satellite and the Spitzer Space Telescope, the Sub-Millimeter Array, the 30-m IRAM radio telescope, the Australia Telescope Compact Array and others.

For the first time, this work presents a comprehensive global multi-scale kinematic equilibrium radiative-transfer model, constructed in `Pyshellspec` (Brož et al. 2021), describing the accretion region, the inner and the outer disks. According to my model, the spectral line profiles are explained by an optically thin spherical inflow/outflow within the co-rotation radius of the star, with velocities surpassing 330 km/s. The VLTI near-infrared interferometric observables can be accounted for by an innermost disk, extending from 0.1 to 0.2 au. On the other hand, the ALMA visibilities are compatible with a dust ring, extending from 36 to 56 au. The temperature and density profiles derived from my model suggest the ring could be related the condensation line of CO_2. My models also placed constraints on the inner disk, which has never been spatially resolved. These constraints allowed me to prepare and submit an ALMA proposal to study this region (1–10 au), which is the critical region for the formation of terrestrial and gas-giant planets.