Nicolas Scepi

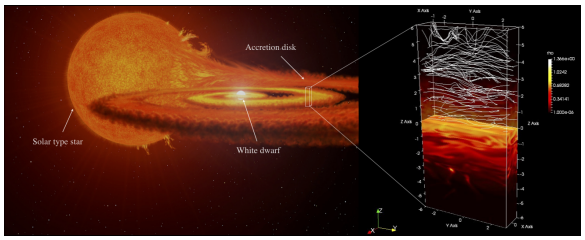
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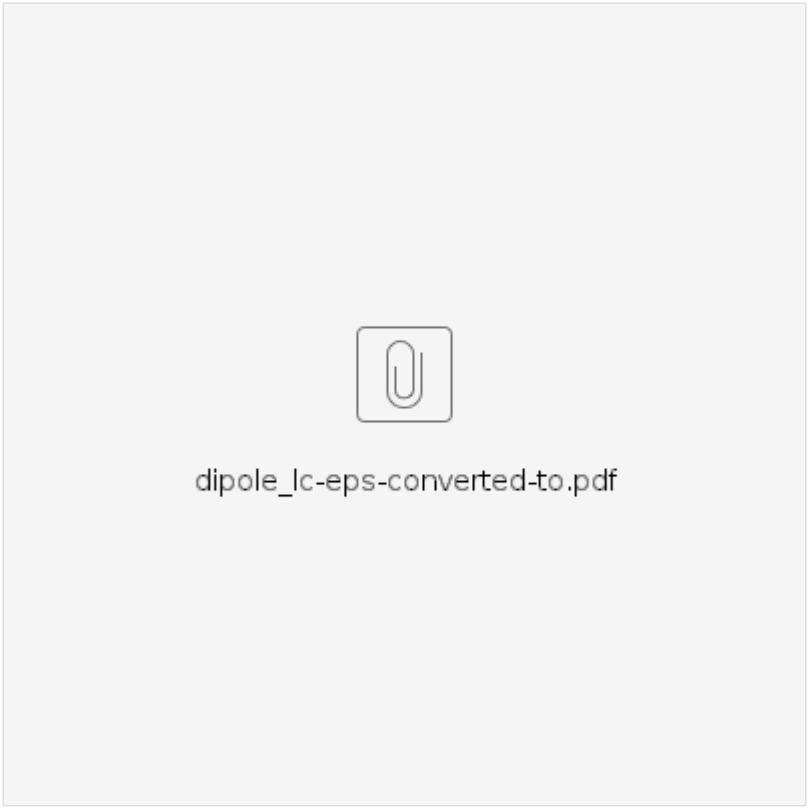
I am **currently a PhD student at IPAG in Grenoble in the high energy and accretion disk group** (SHERPAS team). I **work from a theoretical and numerical point of view on accretion disks around compact binaries**. My research interest are centered on astrophysical plasmas processes. This includes MHD turbulence, formation of winds/jets, dynamo and all type of plasma instabilities. Also, I am particularly into accretion disks as they have such a rich physics with a strong interplay between plasma physics, hydrodynamics, radiative transfer and thermodynamics.

During my PhD thesis, I have been focusing mainly on one particular object : the dwarf novae (a compact binary system with an accreting white dwarf; see Figure below) as we have great observational constraints from these objects. However, the accretion processes that we study are quite similar in all types of accretion disks and I would like to extend my research to X-ray binaries, Active Galactic Nuclei and protoplanetary disks.



My day to day work implies **heavy 3D MHD local (and soon global!) simulations of accretion disks with radiative transfer with the PLUTO code**. I also use a lighter 1D+1D (radial and vertical directions decoupled) code solving the temporal evolution of an accretion disk (see video below from Scepi et al 2018c submitted to A&A) and allowing us to compute the light curves in a very short amount of time (see figure below from Scepi et al 2018c submitted to A&A). Additionally, I perform analytical calculations to complement numerical simulations in our understanding of the physics inside accretion disks.

disk.mp4


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