Radiative properties of stellar plasma
The challenges we need to face
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Radiation plays a crucial role in stars. It determines the longevity of low mass stars and the visible appearance of different types of stars which generally present some variability.

The development of the seismic discipline for Sun and stars is rapid, thanks to three observing space programs: SoHO, COROT, KEPLER and in the next decade PLATO. It will lead to a renewal of stellar evolution. The questions we hope to solve in the next decade will lead to an unified vision of stars from their formation to their death with new challenges on the determination of this fundamental ingredient which is in competition with convection but also with other dynamical processes.

I shall separate the talk in two parts: I shall mention first why this ingredient must be defined properly: relation between absorption coefficient and sound speed, excitation of the modes, identification of the modes, competition between microscopic and macroscopic physics. I shall take some examples of questions we would like to answer to illustrate the different points.

The second part of my talk will be dedicated to the difficulties we try to face, both on the computation of these processes and on the experimental way to check the validity of the calculations and how we hope to solve them.

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References