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# Methods to solve multi-dimensional polarized radiative transfer equation with line scattering, magnetic fields and partial frequency redistribution

Anusha Lokanathapura Seetharamabhasari\*<sup>1</sup>

<sup>1</sup>Max Planck Institute for solar system research, Goettingen – Germany

## Abstract

Solar observations and numerical simulations have proved the existence of enormous inhomogeneous structures in the solar atmosphere. Solving polarized radiative transfer equation is a powerful means of understanding the effects of these inhomogeneities on the spectrum emerging from the Sun. To take spatial inhomogeneities into account, a solution of the transfer equation in multi-dimensional geometries is necessary. Here we present a summary of the high speed iterative methods that we developed in a series of papers, to solve multi-dimensional polarized radiative transfer equation and the application of these methods to analyze the observations.

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\*Speaker