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Toward a coherent set of radiative transfer tools for the analysis of planetary atmospheres

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Abstract.

The IAPS experience in the field of analysis of planetary atmospheres from visual and infrared measurements dates back to the early '90 in the frame of the IFSI participation to the Mars96 program. Since then, the forward models as well as retrieval schemes have been constantly updated and have seen a large usage in the analysis of data from Mars Express, Venus Express and Cassini missions. At the eve of a new series of missions (Juno, ExoMars, JUICE), we review the tools currently available to the Italian community, the latest developments and future perspectives. Notably, recent reanalysis of PFS-MEX and VIRTIS-VEX data (Grassi et al. 2014) leaded to a full convergence of complete Bayesian retrieval schemes and approximate forward models, achieving a degree of maturity and flexibility quite close to the state-of-the-art NEMESIS package (Irwin et al. 2008). As a test case, the retrieval code for the JIRAM observations of hot-spots will be discussed, with extensive validation against simulated observations.

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