Polarized radiation transfer – practical experience with the accelerated lambda iteration method

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Neutron stars and some of the white dwarfs have magnetic fields. The light emitted by these stars is polarized and can be characterized by the four Stokes components I, Q, U, and V. Therefore the polarized radiation transport equation differs significantly from the non-magnetic case. It is a system of linear differential equations coupled in I, Q, U, and V with depth dependent opacities and magneto-optical parameters. The most potential method, the accelerated lambda iteration, is presented in detail and practical experiences calculating neutron star atmospheres are reported.