Reflection Effect in Close Binaries

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The theoretical modeling of binary systems can be performed by considering realistic models which take into account the radiative transfer, hydrodynamics, reflection effect, temperature structure etc. Since the problem is complex, we have studied some of idealized models which will help us in understanding the important physical processes in close binaries. A method has been developed for obtaining radiation field along the spherical surface irradiated by an external point source, extended source of radiation as first step to understand the reflection effect in close binary systems. The method has been extended to the case of atmospheres distorted due to self rotation of the component and tidal effects due to the presence of its companion. We have computed the effects of irradiation on the line formation in the expanding atmospheres of the components of close binary systems.

We notice that the expansion of the medium produces P Cygni type profiles and the irradiation enhances the emission in the lines although the equivalent widths reduce considerably. In the case of distorted atmospheres, the self radiation produces the absorption line and the combination of self radiation andirradiation from the secondary component produces the emission profile.