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Particle acceleration in colliding winds of massive binaries

Wind-wind collision of massive binaries produces strong shock fronts of compressed and heated plasma, with amplified magnetic fields, where particles may be accelerated to very high energies. Here we present examples of full three-dimensional magnetohydrodynamical simulations of colliding winds, which computational code also provide kinematics of passive charged particles subject to ambient fields. A large number of thermal test particles are evolved and produce a non-thermal population with energies in the range of few tens of GeVs up to tens of TeVs, depending on the initial magnetization level of the stellar winds. We analyzes the regions where main acceleration occurs. These results show that CWBs are possible target for the next generation of high energy particle observatories.

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