Interactions between jets and clumpy stellar winds in high-mass microquasars

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There is strong observational evidence pointing to the inhomogeneous nature of the winds of massive stars. In high-mass microquasars, the inhomogeneities (or clumps) of the primary star wind could interact with the jet launched from the secondary component, an accreting black hole or neutron star.
The dense clumps of the wind can penetrate into the jet creating shocks and therefore accelerating particles. These relativistic particles will interact with the ambient photon, magnetic, and matter fields, generating radiation from radio to gamma rays with a specific time signature. This broadband emission can provide information, not only on the high-energy processes occurring in microquasar jets, but also on the structure of the wind of massive stars. On the other hand, the flaring TeV emission sporadically detected in the binary systems LS 5039, LS I+61 303 and Cygnus X-1 could be explained by the proposed model.