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The soft-hard antenna spectrum in presence of a QGP

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The modification of colour coherence effects in QCD radiation due to the presence of a QGP has been the focus of an extensive theoretical effort in the last decade. The fundamental building block of this effort is the computation of the interference emission of a gluon from a pair of partons (quarks or gluons) with a common direct ancestor, what is usually referred as the antenna spectrum. Understanding of the antenna spectrum forms the backbone of event generators where interference effects much be encoded in a probabilistic language. Current state-of-the art event generators that simulate the interaction of jets with QGP fail short of accurately accounting for QGP induced modifications of the antenna interference pattern. Going beyond the current status requires lifting several approximations in the standard in-QGP antenna calculations, particularly by addressing the case in which the interfering partons carry very different energy (soft-hard antenna).

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