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Soft-quark bremsstrahlung and energy losses

Within the framework of a semiclassical approximation the general theory of calculation of effective currents and sources generating bremsstrahlung of an arbitrary number of soft quarks and soft gluons at collision of a high-energy color-charged particle with thermal partons in a hot quark-gluon plasma, is developed. For the case of one- and two-scattering thermal partons with radiation of one or two soft excitations, the effective currents and sources are calculated in an explicit form. In the model case of 'frozen' medium, approximate expressions for energy losses induced by the most simple processes of bremsstrahlung of soft quark and soft gluon, are derived.

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