

We consider two applications of the factorization of infrared dynamics in QED and gravity. The first is a redefinition of the Lorentz transformations that makes them commute with supertranslations. The other is the process of particle creation near a black hole horizon. For the latter we show that the emission of soft particles factors out of the S-matrix in the fixed-background approximation and to leading order in the soft limit. The factorization is implemented by dressing the incoming and outgoing asymptotic states with clouds of soft photons and soft gravitons. We find that while the soft photon cloud has no effect, the soft graviton cloud induces a phase shift in the Bogolyubov coefficients relating the incoming and outgoing modes. However, the flux of outgoing particles, given by the absolute value of the Bogolyubov coefficient, is insensitive to this phase.