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Marcel Griesemer: On Rayleigh scattering in the massless Nelson model

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Asymptotic completeness of Rayleigh scattering in models of atoms and molecules of non-relativistic QED is expected, but to prove it, we still lack sufficient control over the number of emitted soft photons. So far, this obstacle has only been overcome for the spin-boson model. In a general class of models, asymptotic completeness holds provided the expectation value of the photon number N remains bounded uniformly in time. This was shown a few years ago by Faupin and Sigal. We review and simplify their work, and, more importantly, we replace the bound on N by a weaker assumption on the distribution of N that is both necessary and sufficient for asymptotic completeness. - This is joint work with Valentin Kußmaul.