

Chapter 1

Quantum Spontaneous Propulsion

For an ordinary point particle, the polarizability of which is reciprocal, a relative velocity between the particle and the surrounding blackbody background is necessary for any transverse force to arise, as we have seen in the previous chapters. For a nonreciprocal point particle which is not in thermal equilibrium with the environment, self propulsion can be induced even if the particle is initially at rest. We will explore the fluctuation-induced effects for such a nonreciprocal particle in Ref. [?]. In addition, self propulsion is also possible for extended objects made up of reciprocal but nonuniform materials. See, for example, Ref. [?] by Reid et al.