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Effects of phase space sticky motions in nearly-integrable dielectric billiards on far-field patterns

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Abstract– In the ray dynamics of nearly-integrable billiards, it is well known that survival probability distributions have long time tails due to the sticky motions in the chaotic sea very close to the outermost KAM torus in the phase space. We study how the stickiness influences the emission patterns of nearly-integrable billiard lasers. In this presentation, we will report the relations between the survival probability distributions of ray-chaotic trajectories in the sticky area, the lifetimes and the emission patterns of the resonant modes of the nearly-integrable dielectric billiards.