Dynamical Zeta Function for Several Strictly Convex Obstacles

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Abstract. The behavior of the dynamical zeta function \( Z_D(s) \) related to several strictly convex disjoint obstacles is similar to that of the inverse \( Q(s) = \frac{1}{\zeta(s)} \) of the Riemann zeta function \( \zeta(s) \). Let \( \Pi(s) \) be the series obtained from \( Z_D(s) \) summing only over primitive periodic rays. In this paper we examine the analytic singularities of \( Z_D(s) \) and \( \Pi(s) \) close to the line \( \Re s = s_2 \), where \( s_2 \) is the abscissa of absolute convergence of the series obtained by the second iterations of the primitive periodic rays. We show that at least one of the functions \( Z_D(s) \), \( \Pi(s) \) has a singularity at \( s = s_2 \).