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John A. Toth* (jtoth@math.mcgill.ca), McGill University, Montreal, Quebec H3A 2K6, Canada, and **Steve Zelditch**, Johns Hopkins University, Baltimore, MD 21218. *Counting nodal lines which touch the boundary of an analytic domain*. Preliminary report.

Let $\Omega \subset \mathbb{R}^2$ be a piecewise-analytic planar domain. We consider Neumann (resp. Dirichlet) eigenfunctions ϕ_λ satisfying

$$-\Delta\phi_\lambda = \lambda^2\phi_\lambda$$

$$\partial_\nu\phi_\lambda(q) = 0 \text{ (resp. } \phi_\lambda(q) = 0\text{); } q \in \partial\Omega.$$

Let $\mathcal{N}(\lambda)$ be the number of nodal lines of ϕ_λ intersecting $\partial\Omega$. In joint work with S. Zelditch, we prove that

$$\mathcal{N}(\lambda) = O(\lambda).$$

We also prove analogous results for critical points. In the talk, I will discuss these results. (Received September 17, 2007)