

## Spanish and Portuguese Relativity Meeting



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# Quasinormal mode spectrum of the AdS black hole with the Robin boundary condition

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We study the quasinormal mode (QNM) spectrum of an asymptotically AdS black hole with the Robin boundary condition at infinity. We consider the Schwarzschild-AdS<sub>4</sub> with the flat event horizon as the background spacetime and study its scalar field perturbation. Denoting leading coefficients of slow- and fast-decay modes of the scalar field at infinity as  $\phi_1$  and  $\phi_2$ , respectively, we assume a linear relation between them as  $\phi_2 = \cot(\theta/2)\phi_1$ , where  $\theta$  is a constant called the Robin parameter and periodic under  $\theta \sim \theta + 2\pi$ . In a certain range of the Robin parameter, there is an instability driven by the boundary condition. We also find the holonomy in the QNM spectrum under the parametric cycle of the boundary condition:  $\theta = 0 \rightarrow 2\pi$ . After the one-cycle,  $n$ -th overtone of the QNM moves to  $(n - 1)$ -th overtone. The fundamental tone of the QNM is swept out to the infinity in the complex plane.

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