1172-37-321 **Jason Atnip***, j.atnip@unsw.edu.au, and **Gary Froyland**, **Cecilia Gonzalez-Tokman** and **Sandro Vaienti**. *Thermodynamic Formalism for Random Interval Maps with Holes.*

In this talk we develop a quenched thermodynamic formalism for open random dynamical systems generated by finitely branched, piecewise-monotone mappings of the interval. The openness refers to the presence of random holes in the interval, which terminate trajectories once they enter. Consider an invertible, ergodic, measure-preserving map σ on a probability space (Ω, m). For each ω $T_\omega : I \to I$ is a piecewise-monotone, surjective map, and $H_\omega \subset I$ a hole. We prove there exists a unique random probability measure ν_ω supported on the survivor set with $\nu_{\sigma\omega}(\mathcal{L}_\omega f) = \lambda_\omega \nu_\omega(f)$, where $\mathcal{L}_\omega$ is the open transfer operator. We prove the existence of a family of functions q_ω satisfying $\mathcal{L}_\omega q_\omega = \lambda_\omega q_{\sigma\omega}$. $\mu = \nu q$ is an ergodic random invariant measure satisfying an exponential decay of correlations. The escape rate of the closed conformal measure is given by the difference of the expected pressures, and we prove that the Hausdorff dimension of the surviving set is equal to the unique zero of the expected pressure function for almost every fiber. We give examples including random β-transformations. (Received August 31, 2021)