

## Ruelle-Pollicott resonances of the perturbed cat map

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We develop a method of calculating the Ruelle-Pollicott resonances in which we use cosine and sine basis states to form the matrix elements of the Frobenius-Perron operator. We use a simple model, the perturbed cat map, to verify our method. Because the matrix is sparse, we find we are able to reach large matrix dimensions and obtain stable, distinct values for the Ruelle-Pollicott resonances of the system. Our results show a lower bound on the spectrum of stable resonances. By examining the leading eigenvalue and eigenfunction, we calculate the system's box-counting dimension and confirm that our model is fractal.