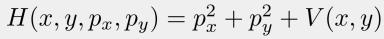# Diffusion Transitions in a 2D Periodic Potential

M. Lazarotto; I. Caldas and Y. Elskens

Model

$$H(x, y, p_x, p_y) = p_x^2 + p_y^2 + V(x, y)$$

where

$$V(x,y) = U\left(\cos^2(x) + \cos^2(y) + 2\alpha\cos(x)\cos(y)\right)$$

2π

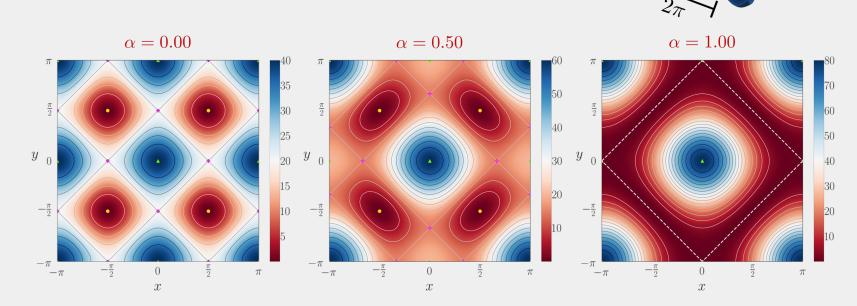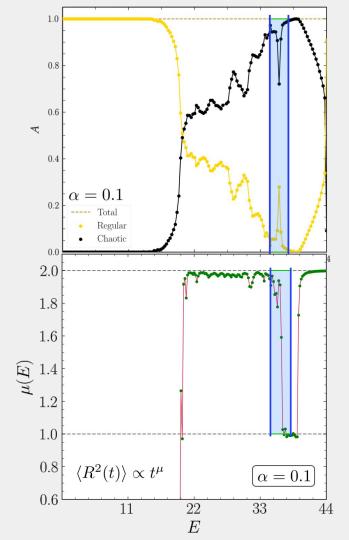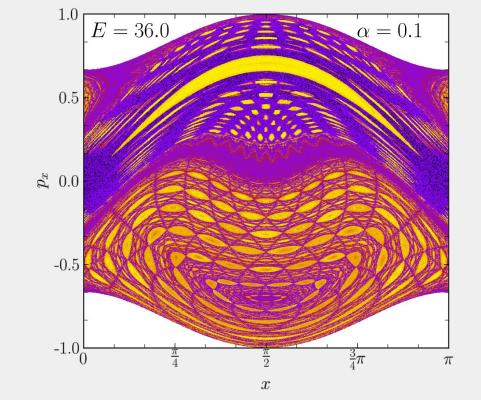$\alpha = 0.00$ $\alpha = 0.50$ $\alpha = 1.00$

$E = 36.0$ $\alpha = 0.1$

- Non-trivial diffusion transition from free ($\mu \approx 2$) to normal ($\mu \approx 1$) regime
- Correlation with the emergence of an island myriad bifurcation (peak in stable area) for E=36.0