1027-11-80   **Arthur Baragar*** (`baragar@unlv.nevada.edu`), 4505 Maryland Parkway, Box 4020, Las Vegas, NV 89154-4020. *Orbits of rational points on certain $K3$ surfaces and the ample cone.*

In this talk, we investigate orbits of rational points under the action of the group of automorphisms on $K3$ surfaces. For $K3$ surfaces with a particular Picard lattice, such an orbit is either finite, or the exponent of growth for the number of points in the orbit is $\alpha = .6527 \pm .0012$. We interpret the exponent α as the Hausdorff dimension of a fractal set associated to the ample cone and give a pictorial representation of it as well as those associated to a few other Picard lattices. (Received February 15, 2007)