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Ross M Ptacek* (rptacek@uab.edu), 3419-B Primm Lane, Hoover, AL 35216, and **John C Mayer**. *Combinatorial Classification of Cubic Polynomials with a fixed Siegel Disk*. Preliminary report.

We will consider the dynamics of polynomial maps of the form $z \mapsto \lambda z + a_1 z^2 + a_2 z^3$ where the phase of λ is an irrational of Brjuno type. In this case, the map is linearizable in a neighborhood of 0, and the maximal such neighborhood is called a Siegel Disk. One of the critical points of the map always accumulates on the boundary of the Siegel Disk. We adopt Zakeri's parameterization and corresponding connectedness locus, $\mathcal{M}(\theta)$. The components of the interior of $\mathcal{M}(\theta)$ are classified by how the critical point not necessarily associated with the Siegel disk behaves. In particular we consider *capture* components, in which this critical point eventually maps into the Siegel Disk. Let \mathcal{C} be the union of the closures of all capture components. We define the Principal Capture Locus to be the component of \mathcal{C} whose closure contains 1. We first define internal addresses for \mathcal{C} and then use Thurston laminations to classify the dynamics of maps represented in \mathcal{C} . Finally, we extend the laminational model to points in the closure of the Principal Capture Locus where the corresponding Julia set exhibits two distinct quadratic behaviors rather than a single cubic behavior. (Received September 22, 2009)