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Rodrigo A Perez*, LD-224R, 402 N. Blackford St., Indianapolis, IN 46202, and **Magnus Aspenberg**. *Catalan, Fibonacci, and Siegel*. Preliminary report.

An analytic function $f : \mathbb{C} \rightarrow \mathbb{C}$ has a Siegel disk at 0 if $f(0) = 0$, $f'(0) = e^{2\pi i\theta}$ ($\theta \notin \mathbb{Q}$), and there is an analytic map φ that conjugates f to its linear part $z \mapsto e^{2\pi i\theta} z$.

Most modern proofs of the existence of Siegel disks use quite sophisticated techniques. In contrast, Siegel's original proof was completely elementary, and has been largely forgotten. In this talk I will argue that going back to his 1942 methods, describing in detail the underlying combinatorics, has the potential to obtain sharper results than currently known. In particular, we will discuss lower bounds on the size of Siegel disks, and a famous conjecture of Carleson. (Received September 26, 2012)