Lopsided amoebas and effective amoeba approximation

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The amoeba $A(f)$ of a polynomial f is the image of its zero set under the log-absolute-value map. The amoeba captures combinatorial information about f: for instance, the normal fan of the Newton polytope of f determines the asymptotics of $A(f)$.

In 2008, Purbhoo introduced the lopsided amoeba $L(f)$ of f, and showed that $A(f)$ is the limit as $r \to \infty$ of $L(f_r)$, where f_r is constructed from f by a process of iterated resultants.

I will introduce lopsided amoebas geometrically, show how to efficiently compute the resultants involved, and outline some combinatorial challenges in this area.

Joint work with Jens Forsgård, Nathan Mehlhop and Timo de Wolff (all at Texas A&M University, USA).