1138-42-29   **Laurent Baratchart**, **Herbert Stahl** and **Maxim L Yattselev*** (`maxyatts@iupui.edu`).
          Convergence of AAK approximants to algebraic functions.

The n-th AAK approximant h_n to a bounded function f on the unit circle $\mathbb{T}$ is a meromorphic function with at most n poles in the unit disk and a bounded trace on $\mathbb{T}$ that satisfies

$$\|f - h_n\|_{\mathbb{T}} = \inf_h \|f - h\|_{\mathbb{T}},$$

where the infimum is taken over all such meromorphic functions. From the work of Adamyan, Arov, and Krein it is known that h_n is uniquely defined whenever f belongs to the Douglas algebra on $\mathbb{T}$. Moreover, the norm $\|f - h_n\|_{\mathbb{T}}$ is equal to the n-th singular value of the Hankel operator with symbol f. When f is holomorphic in some neighborhood of $\mathbb{T}$, it is known that these singular values decay exponentially. I shall discuss the behavior of the approximants h_n inside the unit disk when f is a restriction of a multi-valued function with finitely many branches and a polar singular set. (Received January 17, 2018)