On the stable analytic continuation with a condition of uniform boundedness

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It is shown that, if $h(x)$ is any continuous function defined on some interval $[-a,b] \subset (-1,1)$ of the real axis, then, in general, its best L^2 approximant, in the class of functions holomorphic and bounded by unity in the unit disk of the complex plane, is a finite Blaschke product. An upper bound is placed on the number of factors of the latter and a method for its construction is given. The paper contains a discussion of the use of these results in performing a stable analytic continuation of a set of data points under a condition of uniform boundedness, as well as some numerical examples.