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Douglas Bowman* (bowman@math.niu.edu), Northern Illinois University, Mathematical Sciences, Watson Hall 320, DeKalb, IL 60115. *Sequential Closures of Continued Fractions*. Preliminary report.

In recent research the author has defined the sequential closure of a sequence, and applied this notion to sequences of approximants of continued fractions. In this talk, topological properties of sequential closures of sequences are described and some of their implications for the convergence theory of continued fractions are given. This yields an extension of previous theory (by the author and J. McLaughlin) from l_1 limit 1-periodic continued fractions to l_1 limit k -periodic continued fractions. Also described is a useful theorem which allows one to compute sequential closures of continued fractions by a method related in theme to the Pincherle theorem. This leads to explicit evaluations of sequential closures of continued fractions of greater generality than was possible by the previous method.

The upshot is that one can tame the divergence of continued fractions when their terms are l_1 perturbations of periodic continued fractions. Among other results this yields a complete characterization of the limiting behavior of q -continued fractions, when $|q| \neq 1$, described by the author and K. Campbell. The fundamental results hold for more general sequences, and in particular for products of elements in unital Banach algebras. Future directions are indicated. (Received September 16, 2008)