

Emrah Kılıç and Helmut Prodinger  
*Variants of the Filbert Matrix*,  
Fibonacci Quart. **51** (2013), no. 2, 153–162

**Abstract**

A variation of the Filbert matrix from [1] is introduced, which has one additional Fibonacci factor in the numerator. We also introduce its Lucas counterpart by taking Lucas numbers instead of Fibonacci numbers in a similar manner. Explicit formulas are derived for the LU-decompositions, their inverses, the inverse matrix, as well as the Cholesky decompositions. The approach is to use  $q$ -analysis and to guess the relevant quantities, and proving them later by induction.