

# Introduction to “Fast matrix computations for functional additive models” by S. Barthelmé

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I am very enthusiastic about the very innovative paper “Fast matrix computations for functional additive models” by S. Barthelmé, which I find both to be both methodologically and practically very useful. The characterization of the new rQK-class of symmetric positive definite matrices (with inspiration from previous work of [Heersink and Furrer \(2011\)](#)), defines a new class of matrices which can be computed with much less computational costs compared to the general case. Further, the rQK-class is closed under multiplication and inversion. This adds new tools to the computational statistician’s toolbox, in addition to the well known computational friendly block-diagonal, Toeplitz, Toeplitz circulant and sparse matrices. Barthelmé demonstrates, con-

vincingly, how to leverage this new rQK-class to obtain great computational savings doing inference in some Latent Gaussian models for functional data analysis.

## References

Heersink, D.K., Furrer, R.: On Moore-Penrose inverses of quasi-Kronecker structured matrices. *Linear Algebra Appl.* **436**, 561–570 (2011)

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