EXPERIMENTAL APPROACHES TO KUTTNER'S PROBLEM

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ABSTRACT. For $\lambda \in (0,2)$, let $k(\lambda)$ denote the smallest positive value of κ so that the truncated power function $\varphi_{\lambda,\kappa}(t) = (1-|t|^\lambda)_+^\kappa$ is positive definite. We give lower and upper estimates of Kuttner's function $k(\lambda)$ through detailed numerical and symbolic computations, and we show analytically that $k\left(\frac{4n+1}{2n+1}\right) \le 2n+1$ for $n \in \mathbb{N}$.