

Schur's multiplication theorem and lower bounds for numerical integration

Jan Vybiral

Czech Technical University in Prague

jan.vybiral@fjfi.cvut.cz

Coauthor(s): Aicke Hinrichs, David Krieg, Erich Novak

The classical Schur's product theorem says that the coordinate-wise product of two symmetric positive semi-definite matrices is a positive semi-definite matrix. We derive a new version of the Schur's product theorem and use it to solve an open problem of Erich Novak about the tractability of numerical integration in high dimensions. As a consequence, we show new lower bounds for numerical integration and sampling recovery in the frame of Hilbert spaces.