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*A vector valued Fefferman-Phong inequality*

Schrodinger operators  $-\Delta + V$  with nonnegative potentials  $V$  in the classical reverse Holder class  $B_p$  were first studied by Z. Shen in 1995, who later in 1999 proved optimal decay bounds for the fundamental solution of these operators by using a variant of the classical Fefferman-Phong inequality. As a first step towards studying Schrodinger operators with a matrix  $B_p$  potential (or more generally uniformly elliptic systems with a matrix  $B_p$  potential), we prove that Shen's Fefferman-Phong inequality holds true in the vector-valued setting for these matrix potentials. This is joint work with B. Davey.