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.