Why is Total Generalized Variation an adapted regularizer for the reconstruction of Quantitative Susceptibility Mapping?

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Experimental results on reconstruction of Quantitative Susceptibility Mapping (QSM) with Total Generalized Variation (TGV) have proved the efficiency of this approach. In this talk, we propose some reasons to explain it. We mainly use two kinds of arguments: first, a geometrical constraint satisfied by the artifacts of QSM, then an extension of the notion of wavefront to functions with bounded variation. We combine both arguments to prove that, for any piecewise constant function, TGV minimization provides the solution of the reconstruction problem.