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**On the design of a finite element multigrid solver for
mimetic finite difference schemes**

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The focus of this work is to study the relation between mimetic finite difference schemes on triangular grids and some finite element methods for two model problems based on **curl**-rot and **grad**-div operators. With this purpose, modified Nédélec and Raviart-Thomas finite element methods are derived respectively. This connection allows us to design an efficient multigrid method for the **curl**-rot problem, by considering canonical inter-grid transfer operators arising from the finite element framework. The resulting algorithm is shown to be very robust and efficient, as confirmed by an special local Fourier analysis for edge-based discretizations on triangular grids.