

**APPLICATION OF HIGH RESOLUTION NVD AND TVD DIFFERENCING  
SCHEMES TO THE DISCRETE ORDINATES METHOD USING UNSTRUCTURED  
GRIDS**

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**ABSTRACT.** High order resolution schemes based on the NVD and TVD boundedness criteria are applied to radiative transfer problems using the DOM in unstructured grids. The implementation of these schemes in unstructured grids requires approximations, and two implementations reported in the literature are compared with a new one. Three different methods have been used to calculate the gradient of the radiation intensity at the centre of the control volumes. The various schemes are applied to several test problems, the results are compared with those obtained using the step scheme, the mean flux interpolation scheme and another high order scheme based on a truncated Taylor series expansion, and the most accurate implementations are identified. It is concluded that although the high order schemes perform much better than the others, they are not as accurate as in Cartesian coordinates, and their order of convergence is lower than in that case.