APPLICATION OF LOCALIZED ADJOINT METHOD TO THE STEDY STATE OF ADVECTION DOMINATED TRANSPORT

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The Eulerian-Lagrangian Localized Adjoint Method (ELLAM) is a general characteristic-based numerical solution procedure that applies to a variety of transport equations [1,2]. It is a member of the general family of numerical approximations referred to as Localized Adjoint Method (LAM) [3]. This latter method follows from the original work did by Herrera in the eighties. When LAM was initiated, it was shown to be very effective to treat the steady state of advection-dominated transport. However, its power was only exhibited in connection with one dimensional problems [4,5]. Its potential for multidimensional problems was announced in [6], but was never fully developed. Now, because LAM has been generalized and improved very much in recent years [7], as it is explained in another talk in this Congress, its effectiveness for multidimensional problems has been verified. Indeed, recently LAM was interpreted as a domain decomposition method (DDM). When DDMs are seen from a unified perspective [8], they are classified into direct and indirect (or Trefftz-Herrera) methods. Applying Trefftz-Herrera approach, it was possible to develop new and more efficient discretization methods [8]. In particular, very effective algorithms for treating steady states of advection dominated transport have been developed. This talk is devoted to explain such results.

References

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