Electronic Transactions on Numerical Analysis. Volume 34, pp. 102-118, 2009. Copyright © 2009, Kent State University. ISSN 1068-9613.

HYBRID COMPACT-WENO SCHEME FOR SOLVING RELATIVISTIC FLOWS*

RICARD GARRIDO[†], PEDRO GONZÁLEZ-CASANOVA[‡], AND ELVIRA TORONDEL[†]

Dedicated to Víctor Pereyra on the occasion of his 70th birthday

Abstract. In this paper the method hybrid compact-WENO proposed by Yu-Xin Ren, Miao'er Liu and Hanxin Zhang has been modified to be used for relativistic fluid dynamics instead of Euler equations. The behavior of this new fifth-order conservative hybrid method is analyzed.

Key words. Hybrid compact-WENO, compact schemes, relativistic fluid dynamics, relativistic flows.

AMS subject classifications. 15A15, 15A09, 15A23

102

^{*}Received March 29, 2008. Accepted November 5, 2008. Published online on August 25, 2009. Recommended by Godela Scherer.

[†]Departamento de Matemática Aplicada, Universidad de Valencia, CP.46100, Burjassot, Valencia, Spain (Ricard.Garrido@uv.es).

[‡]Unidad de Investigación en Cómputo Aplicado, DGSCA, Universidad Nacional Autónoma, Mexico, (pedrogc@dgsca2.unam.mx,eltolo@alumni.uv.es).