

**ASTRONUM 2023
POSTER ABSTRACTS**

Seo, Jeongbhin	<p><i>A New WENO Magnetohydrodynamic Code with a High-Order Constrained Transport Scheme</i> Dongsu Ryu, Ulsan National Institute of Science & Technology, Korea</p> <p>We have developed a new magnetohydrodynamic (MHD) code for astrophysical applications, which is based on a fifth-order finite-difference weighted essentially non-oscillatory (WENO) scheme and a fourth-order strong stability-preserving Runge-Kutta (SSPRK) time-integration scheme. In particular, to match the high-order accuracy of the WENO scheme, we have implemented a new constrained transport (CT) algorithm of high-order accuracy. In this talk, we describe the MHD code and present its performance. We demonstrate that with the new CT scheme, the code achieves fifth-order accuracy in wave decay tests, including a circularly polarized Alfvén wave propagation test. We further demonstrate the high accuracy and robustness of the code through tests involving complex flows.</p>
-------------------	---