**PHYS 8750**

**HW5**

**Flux Corrected, and Flux Limited Methods (Chapter 5)**

**Due November 3, 2020**

1. 1) Derive the flux term for Takacs 4-th order scheme.

2) Modify the code , and insert the flux transport corrected scheme using Takacs 4-th order scheme as the high-order scheme. Comment on what you obtain.

2. Run the code “Advection\_2D\_MethodComp.m” and practice and answer the following questions:

1) Change and (mu and nu in code) from 0.5 to 0.6, and comment on what you obtain.

2) Open Question: modify the codes to fourth-order Takacs scheme or using fourth-derivative spatial filtering to Lax-Wendroff+CTU scheme. Any improvement to remove the small ripples?

If not, any ideas about the possible strategy to achieve the goal?