

Additional illustrations to the paper:

On the transition from 3D to 2D transport equations for a study of long-term cosmic-ray intensity variations in the heliosphere

By

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First we show the illustrations on the general behavior if the calculated intensity and its longitudinal variation. In Fig.1A the calculated spectra of GCR protons for the second half of 2007 and for both HMF polarities are compared with PAMELA data. In Fig. 2A the 3D distribution of the relative variation of the intensity with respect to the intensity averaged over the longitude. So the calculated relative longitudinal variation of the intensity due to HMF polarity variation is less than 0.3 % (to be compared with observations - > 1%).

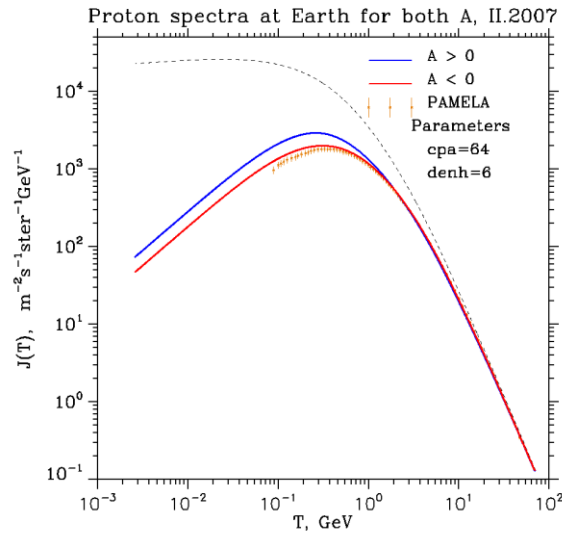


Fig. 1A.

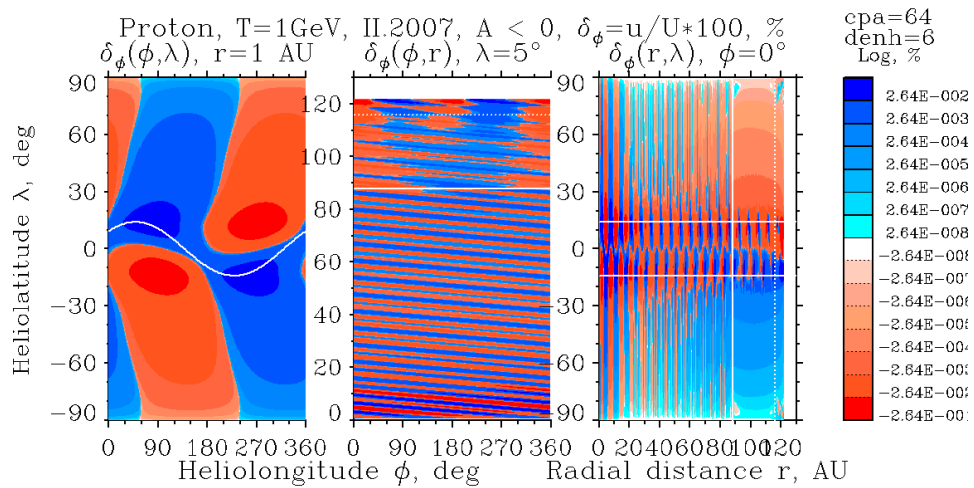


Fig. 2A.

Then we show the illustrations of different characteristics only for HMF polarity $A < 0$, arranging them into the sections **Drift velocities**, **Intensity**, **Drift term of 2D TPE**, **Source of 2D TPE**.

Drift velocities

Figs. 3A-5A – 3D distributions of r , θ , ϕ components of the total drift velocity.

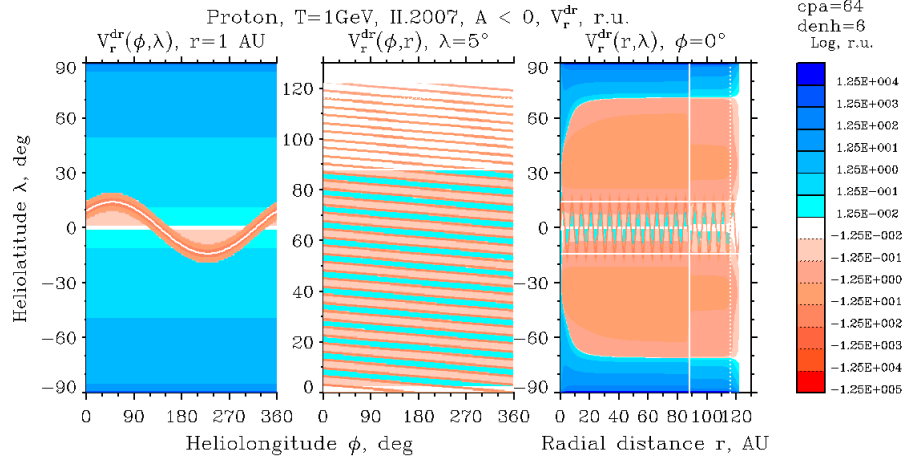


Fig.3A.

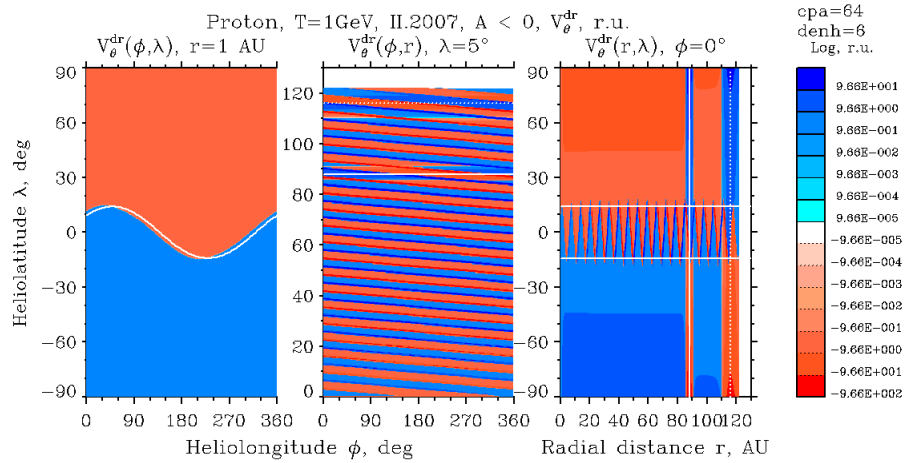


Fig. 4A.

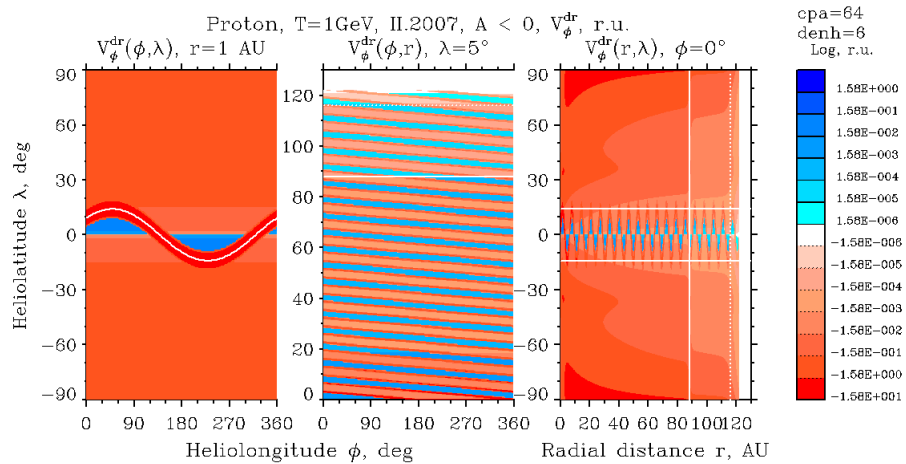


Fig. 5A.

Figs. 6A-8A – 3D distributions of r , θ , ϕ components of the drift velocity along the HCS.

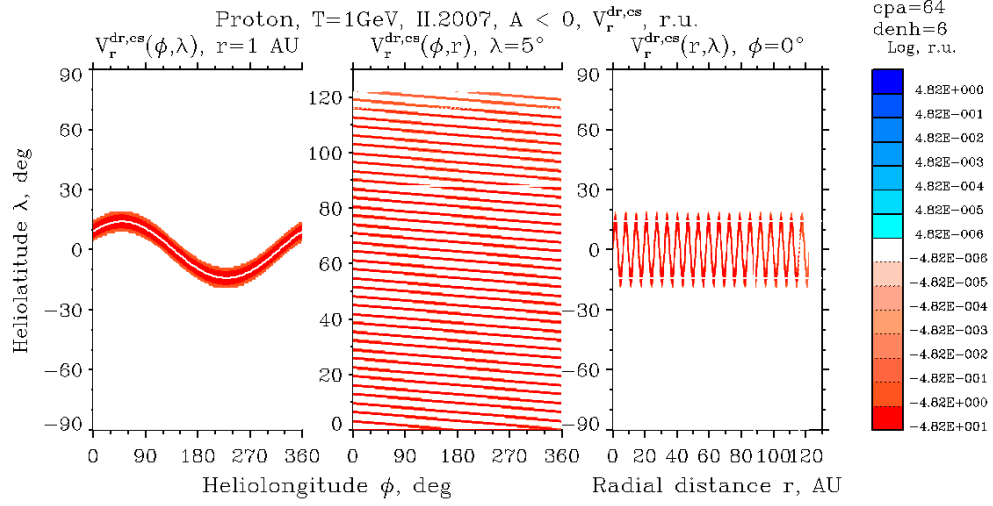


Fig. 6A.

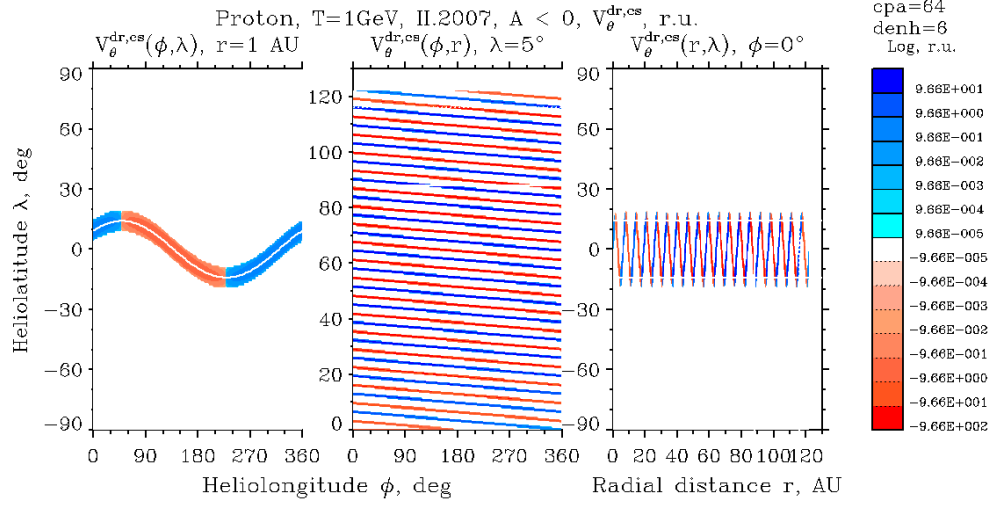


Fig. 7A.

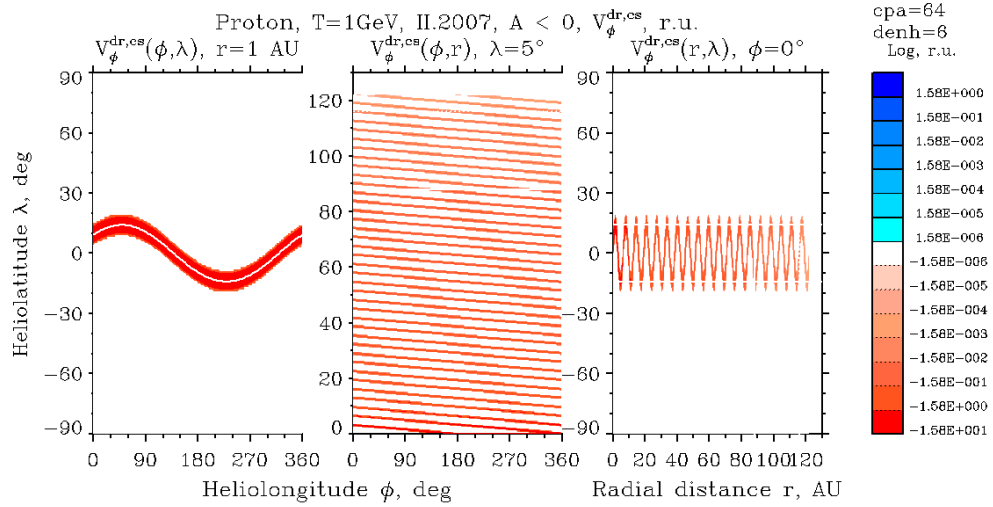


Fig. 8A.

Figs. 9A-10A – 2D distributions of r , θ , ϕ components of the total and along HCS drift velocities, respectively, averaged over longitude.

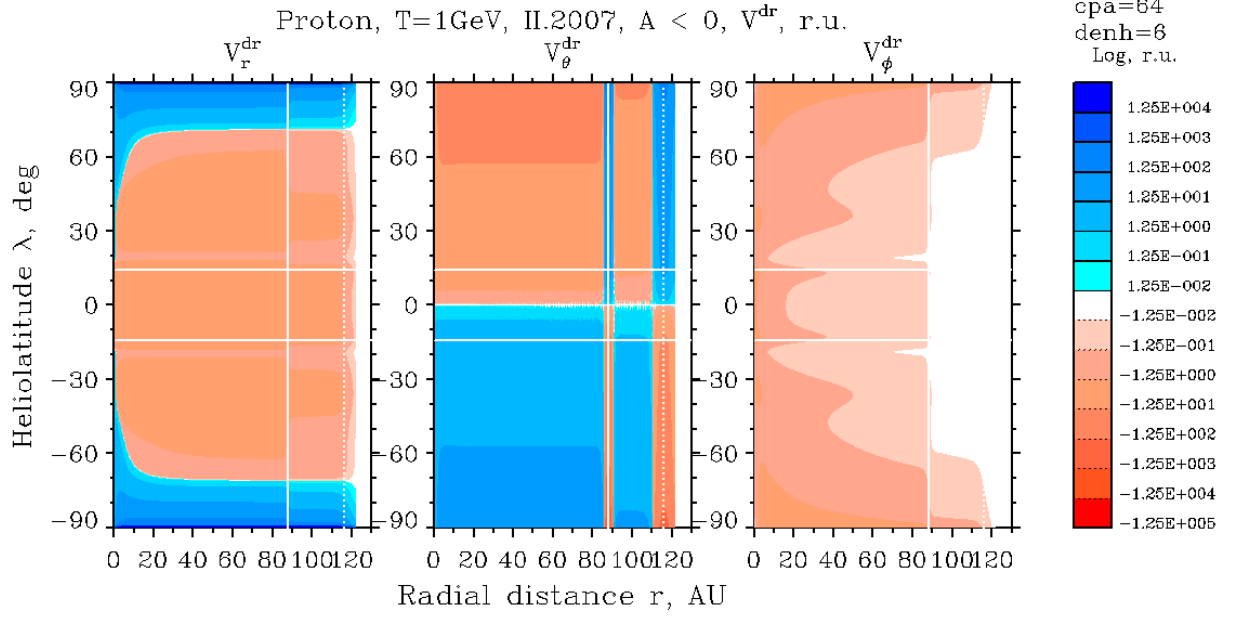


Fig. 9A.

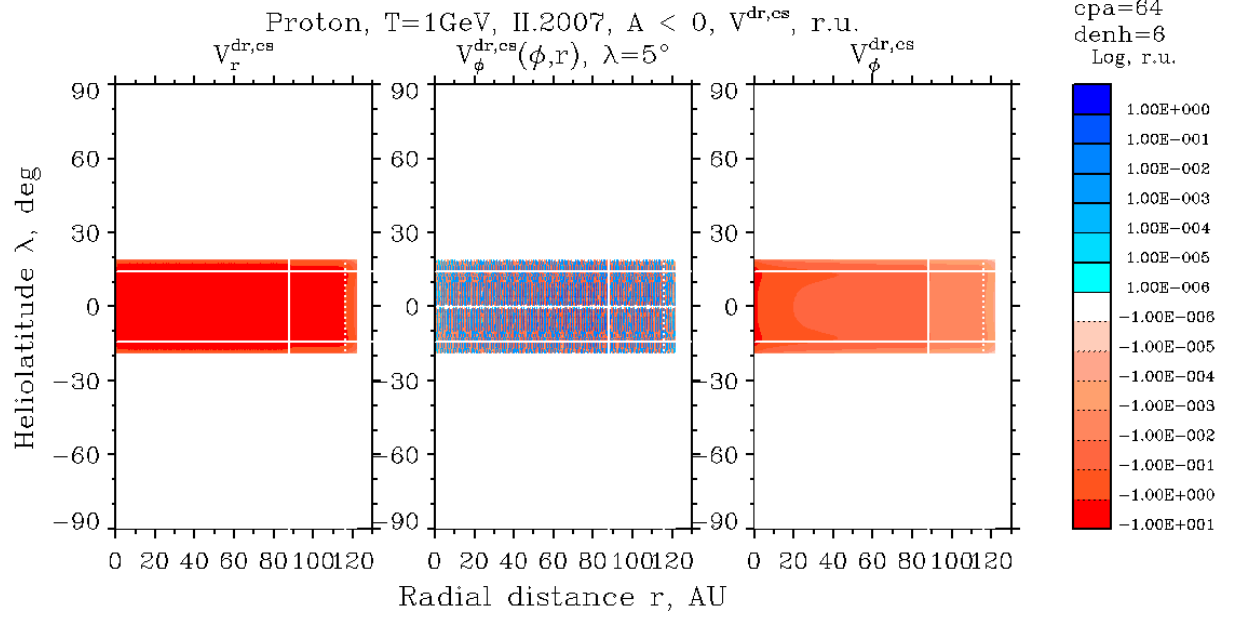


Fig. 10A.

Figs. 11A-13A – 3D distributions of r , θ , ϕ components of the variation of total drift velocity respective to the same component averaged over the longitude.

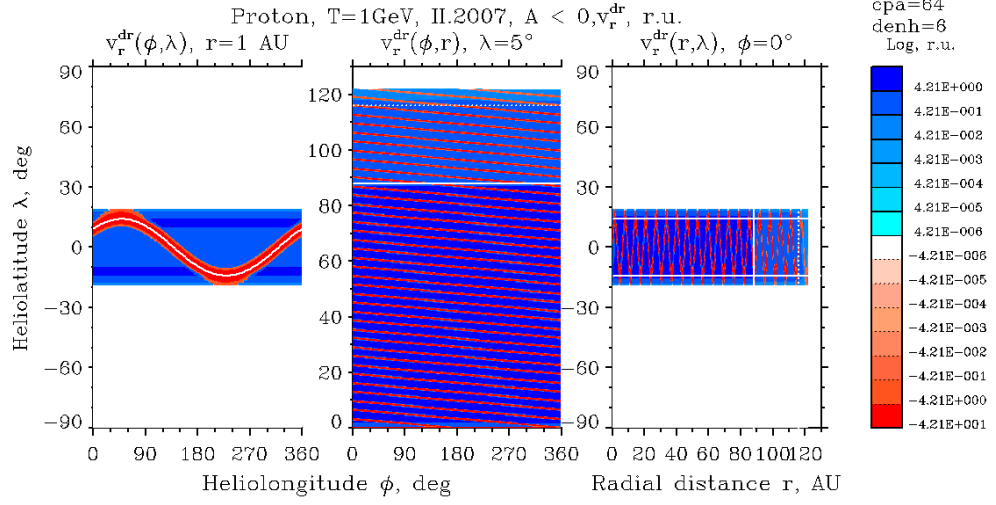


Fig. 11A.

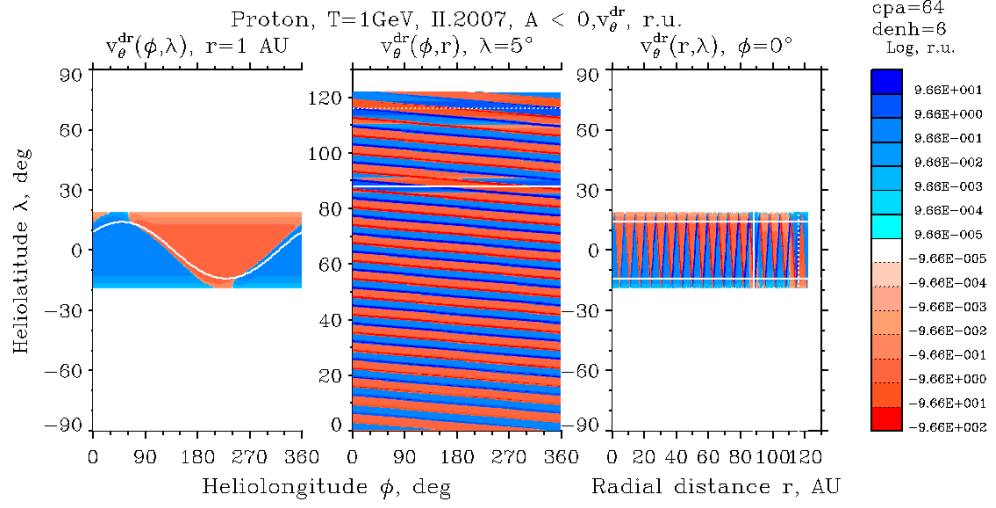


Fig. 12A.

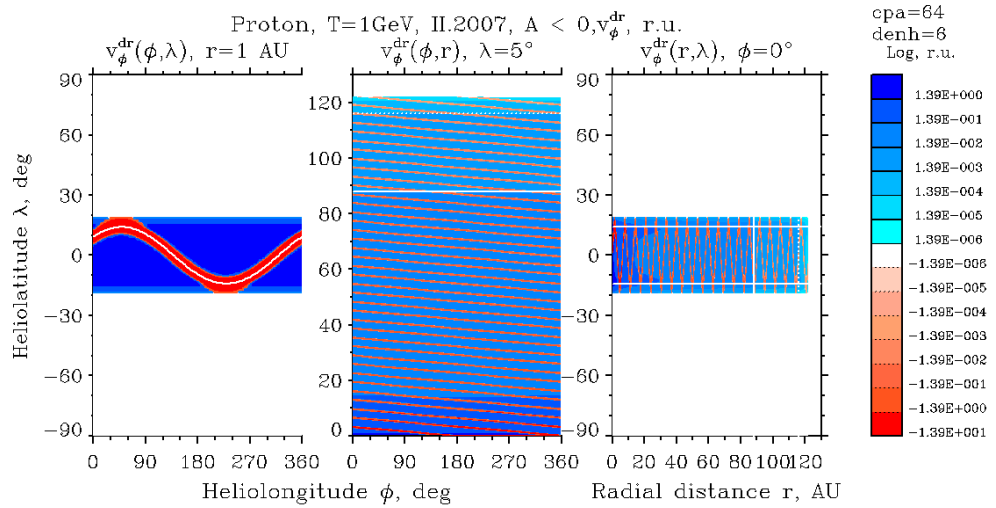


Fig. 13A.

Figs. 14A-16A – 3D distributions of r , θ , ϕ components of the variation of drift velocity along the CS respective to the same component averaged over the longitude.

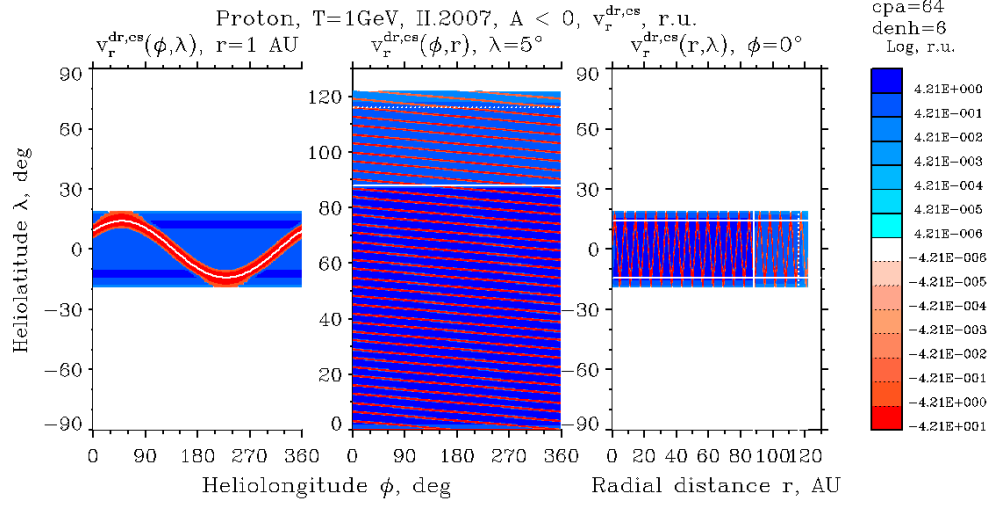


Fig. 14A.

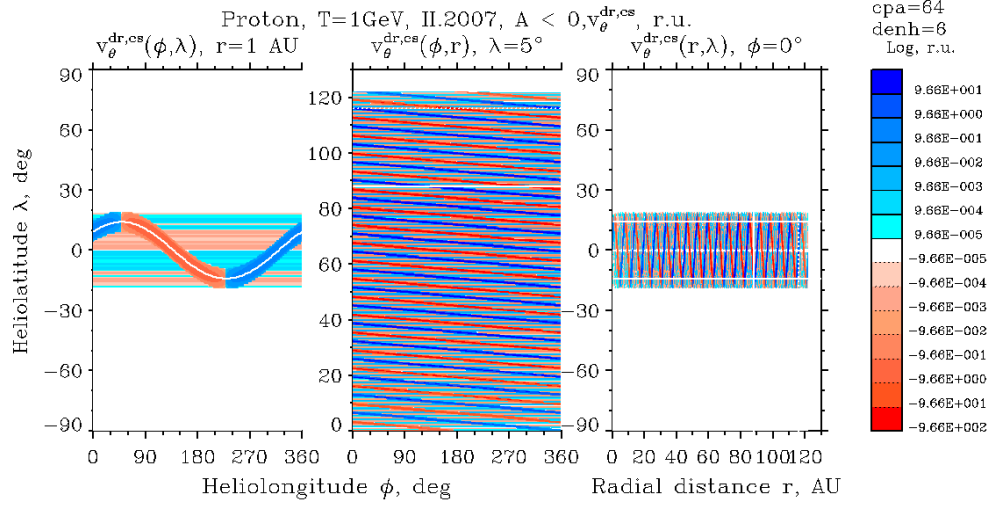


Fig. 15A.

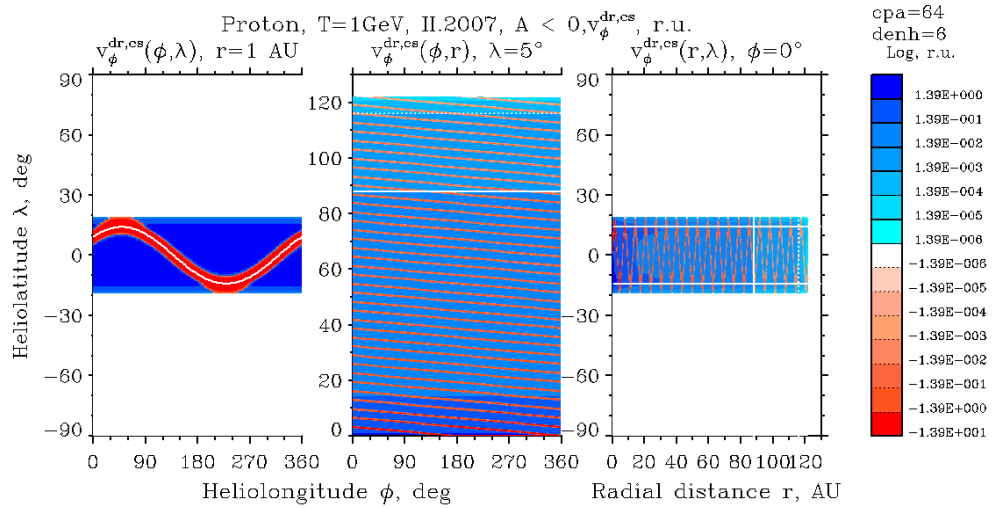


Fig. 16A.

Intensity

Figs. 17A-18A. 2D distributions of the intensity averaged over the longitude and r , θ components of its gradient.

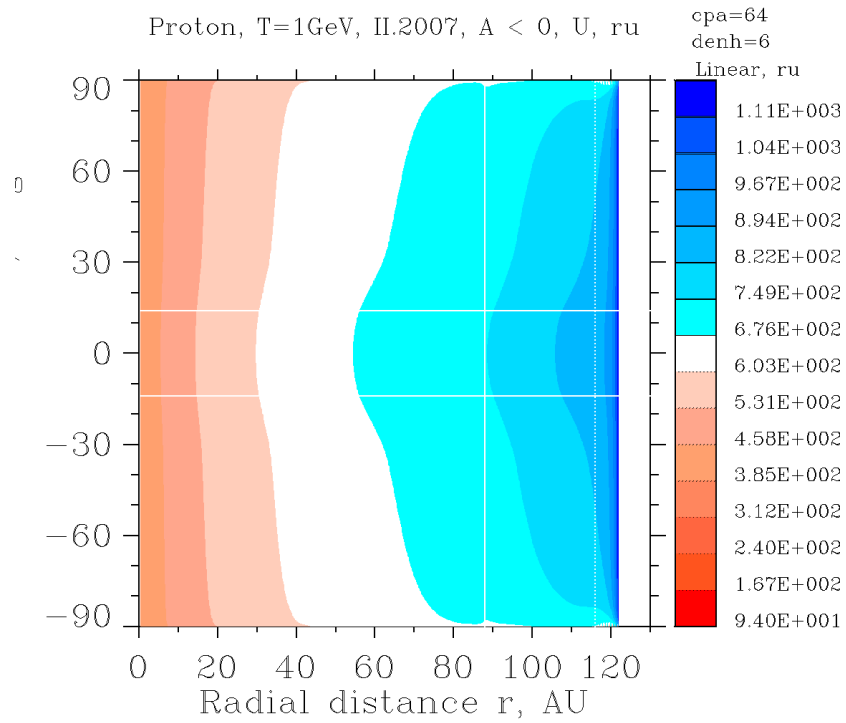


Fig.17A.

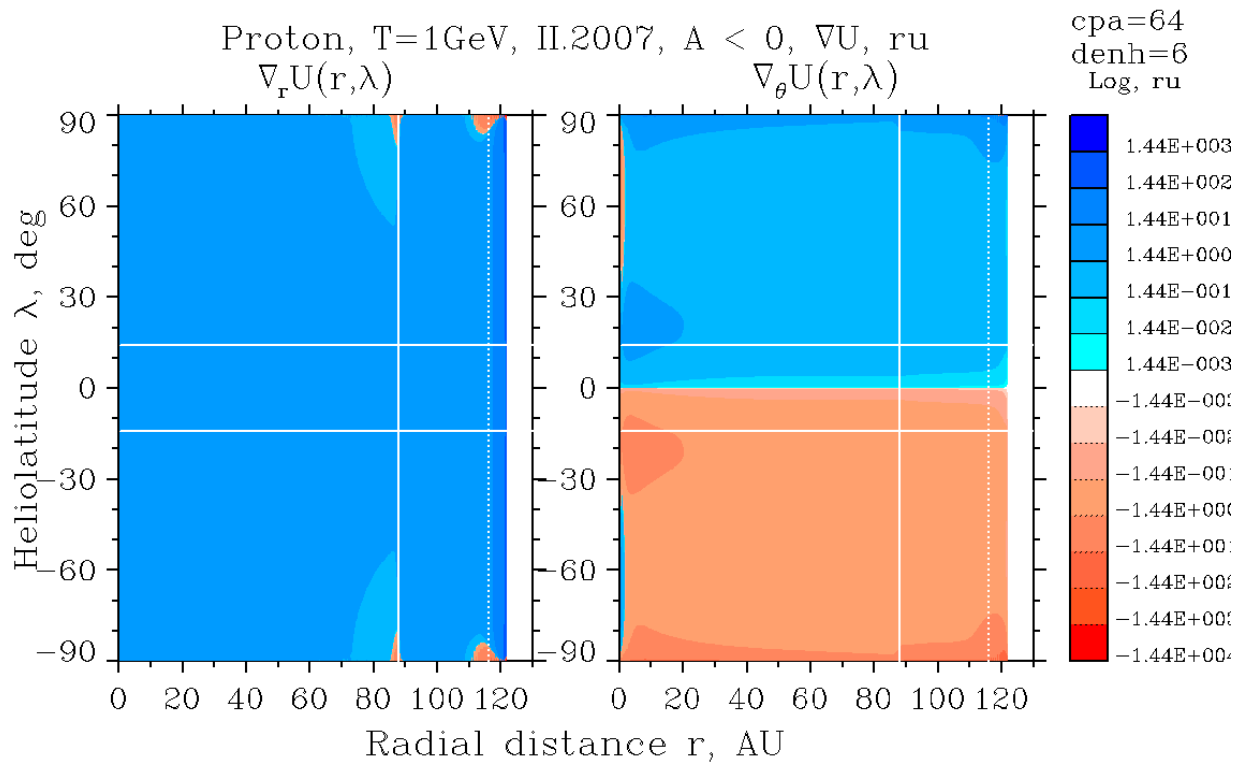


Fig. 18A.

Figs. 19A-21A – 3D distribution of r , θ , ϕ components of the gradient of the variation of the intensity with respect to the intensity averaged over the longitude.

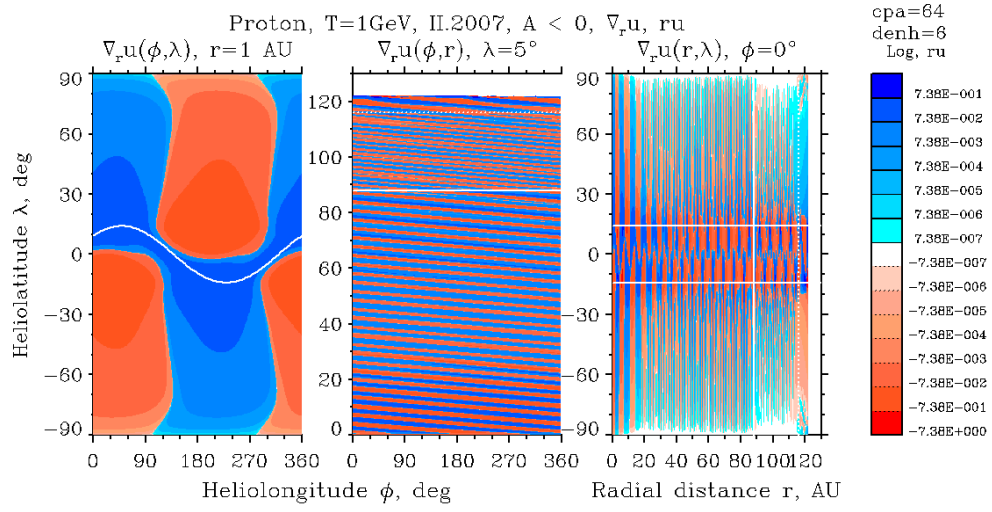


Fig. 19A

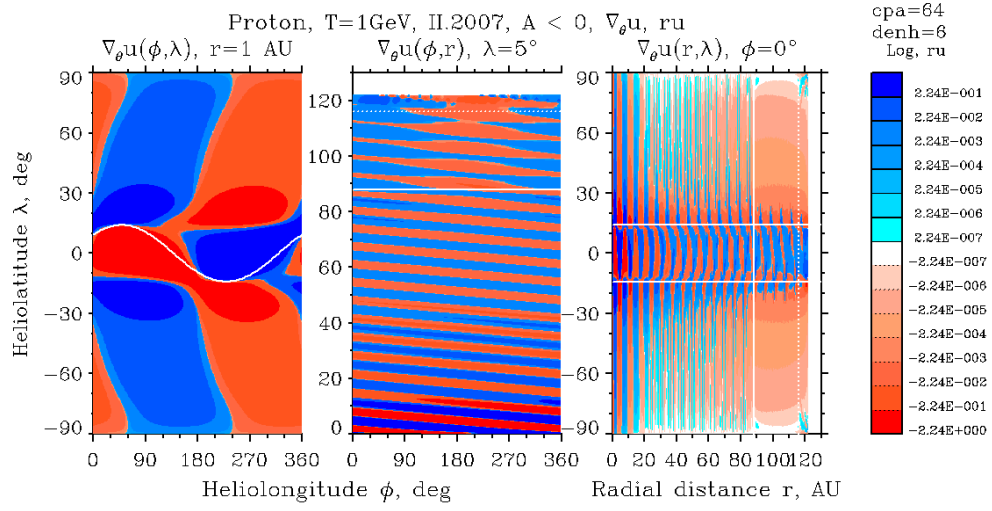


Fig. 20A.

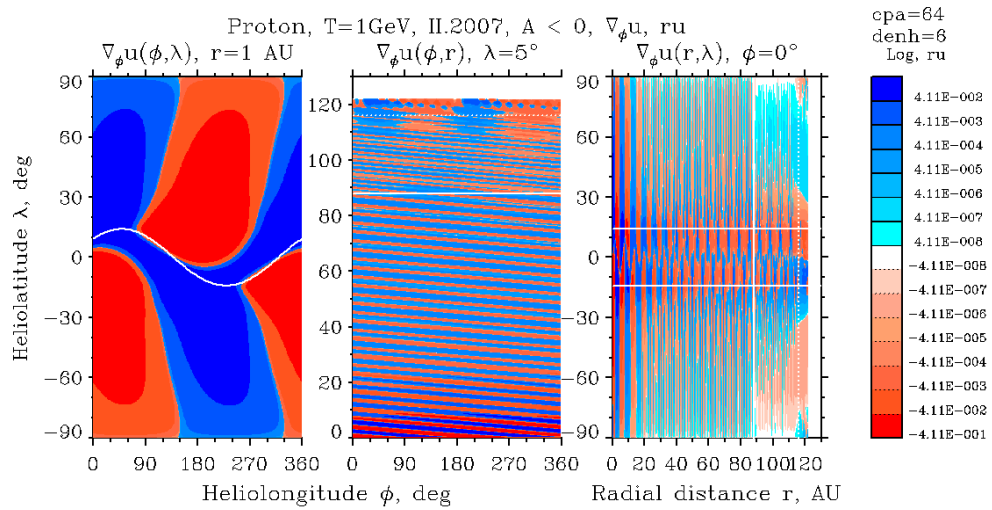


Fig. 21A.

Drift term of 2D TPE

Fig. 22A-24A – 2D distributions of the total drift term of 2D TPE intensity and its regular and CS parts.

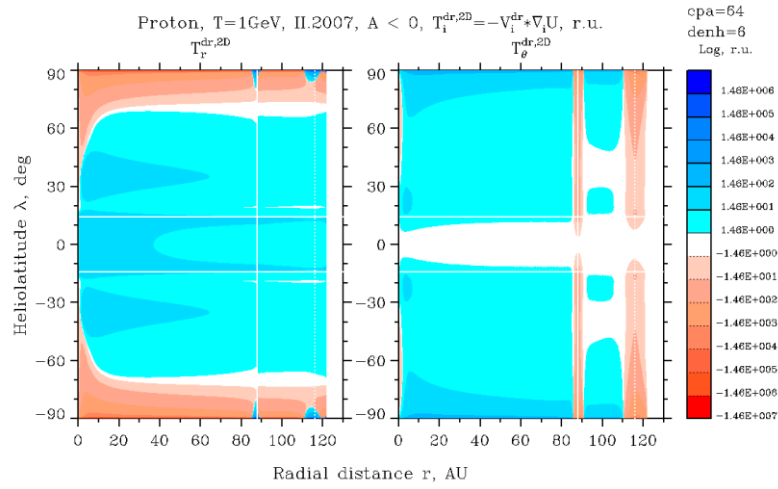


Fig. 22A.

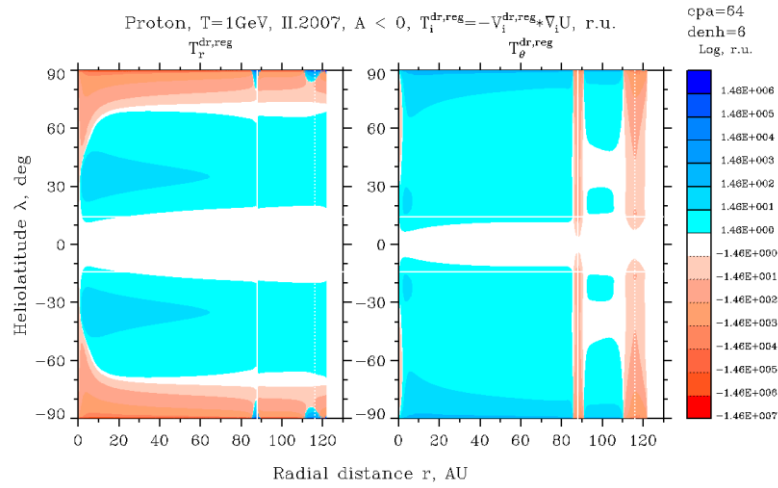


Fig. 23A.

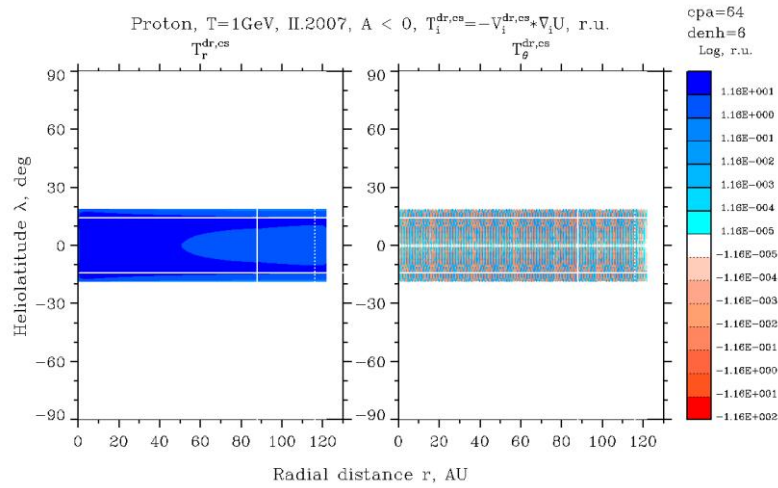


Fig. 24A.

Source of 2D TPE from solving 3D TPE

Figs. 25A-27A – 2D distributions of the calculated source term of 2D TPE and its regular and CS parts.

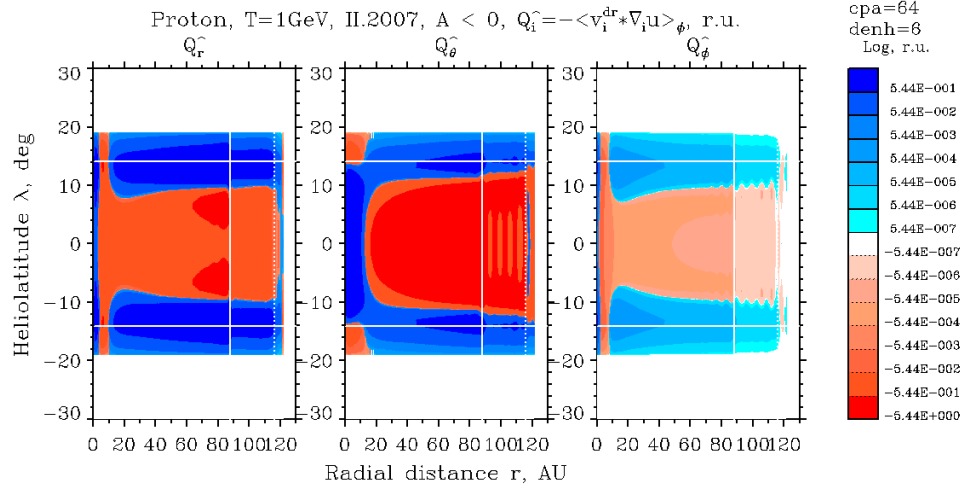


Fig. 25A.

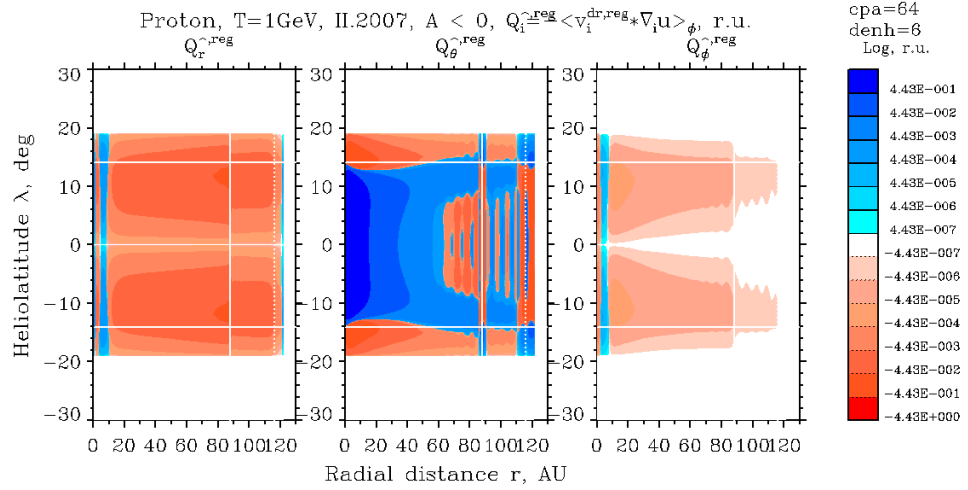


Fig. 26A.

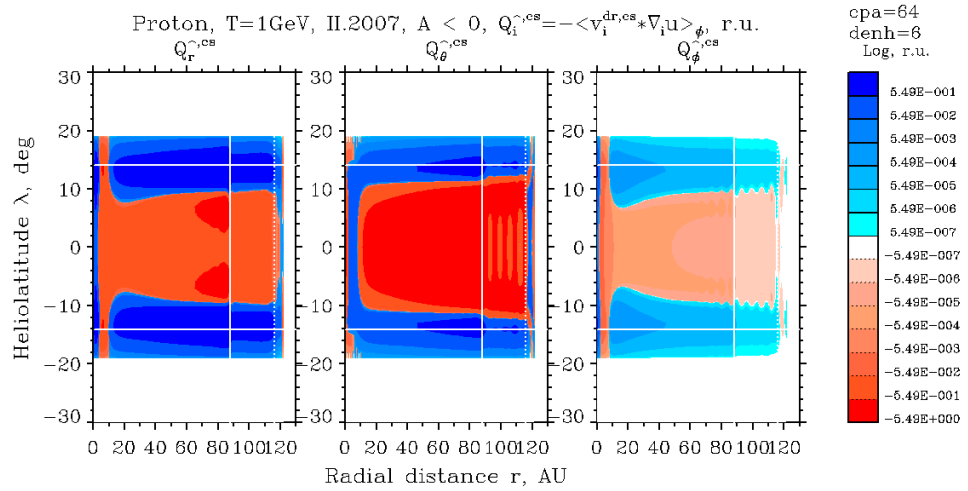


Fig. 27A.

Source of 2D TPE from a priori estimation.

Figs. 28A-30A –2D distributions of the estimated source term of 2D TPE and its regular and CS parts.

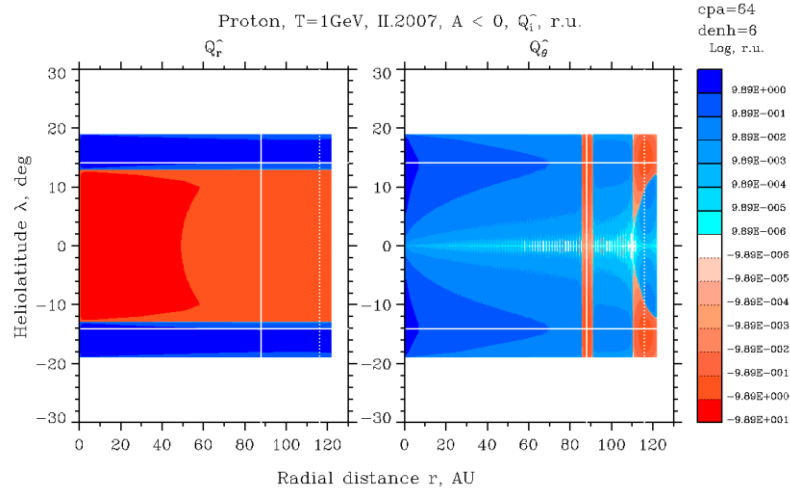


Fig. 28A.

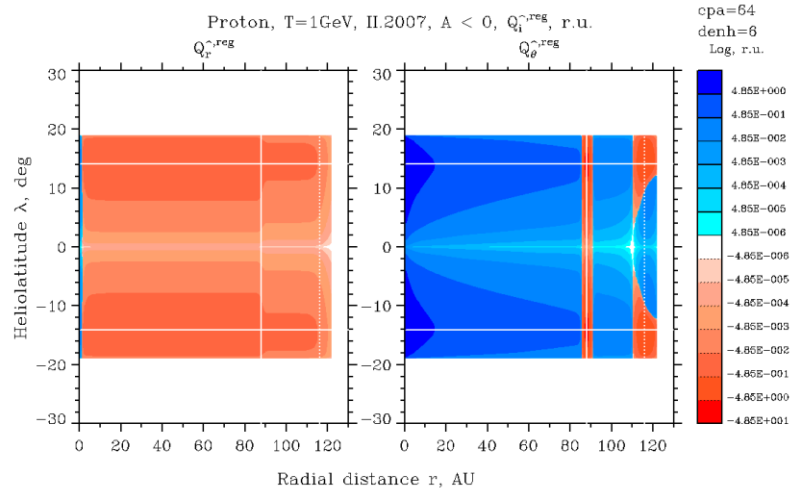


Fig. 29A.

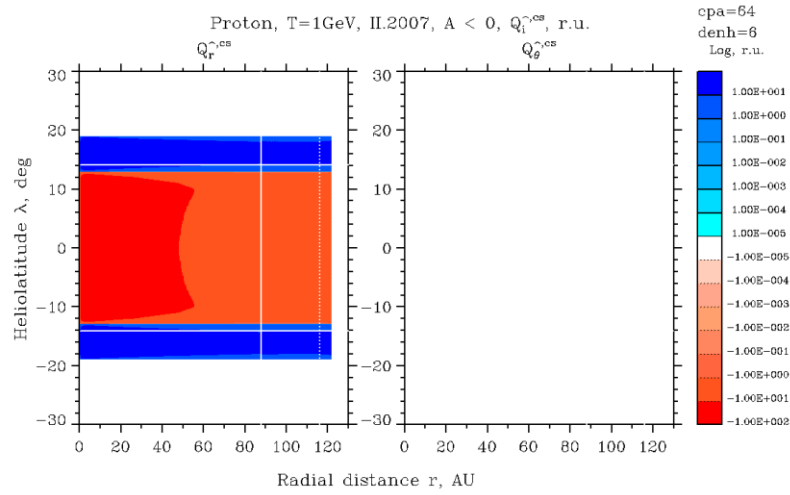


Fig. 30A.