Propagation of "Simple Waves": Basic Properties

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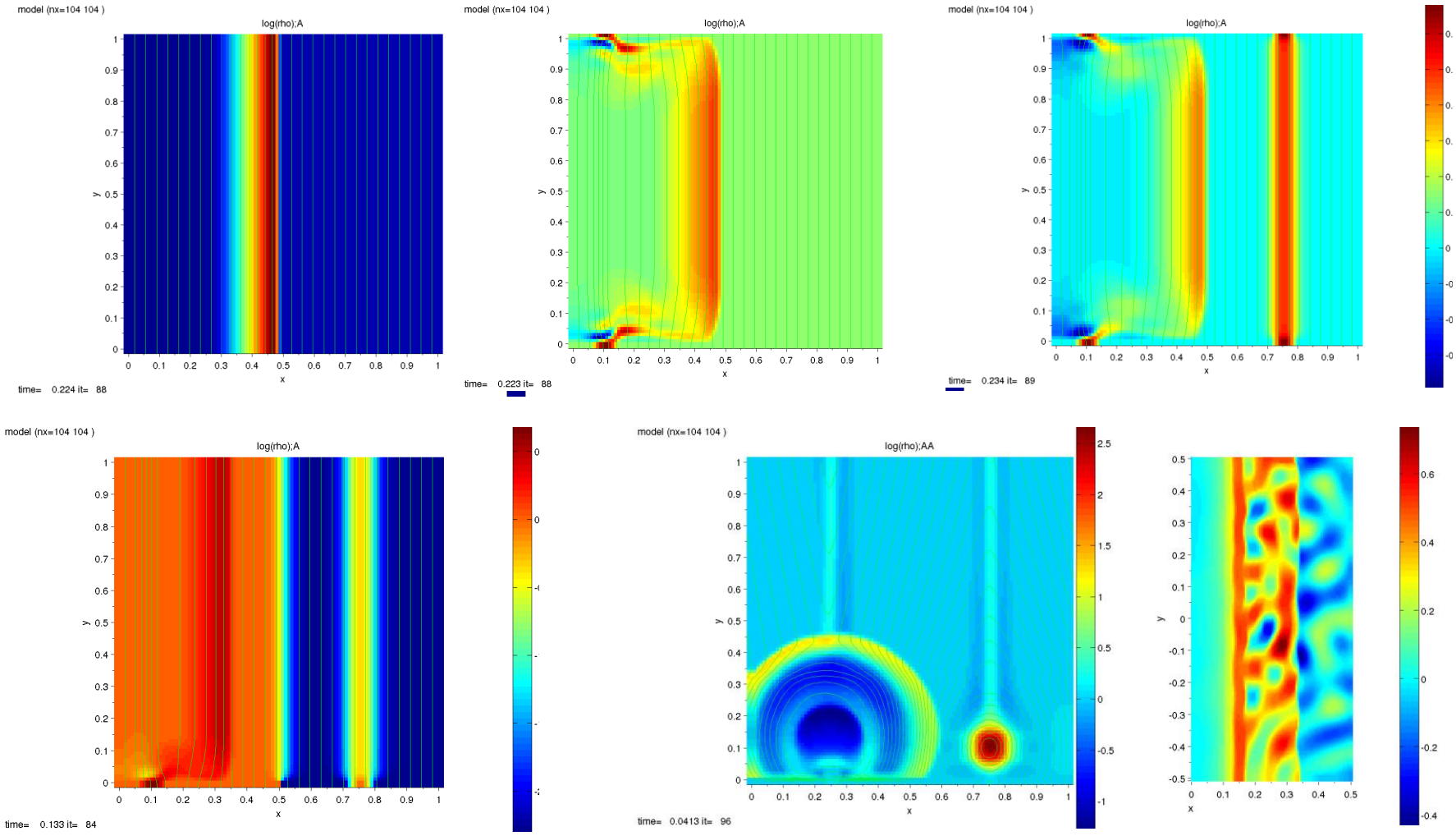
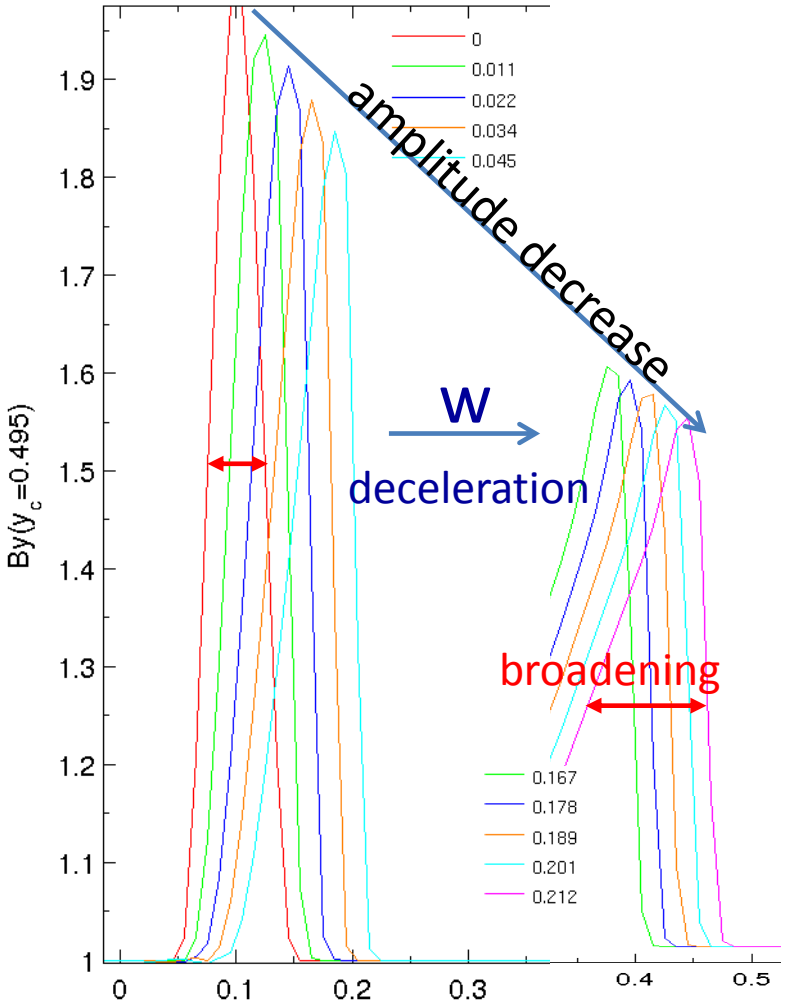
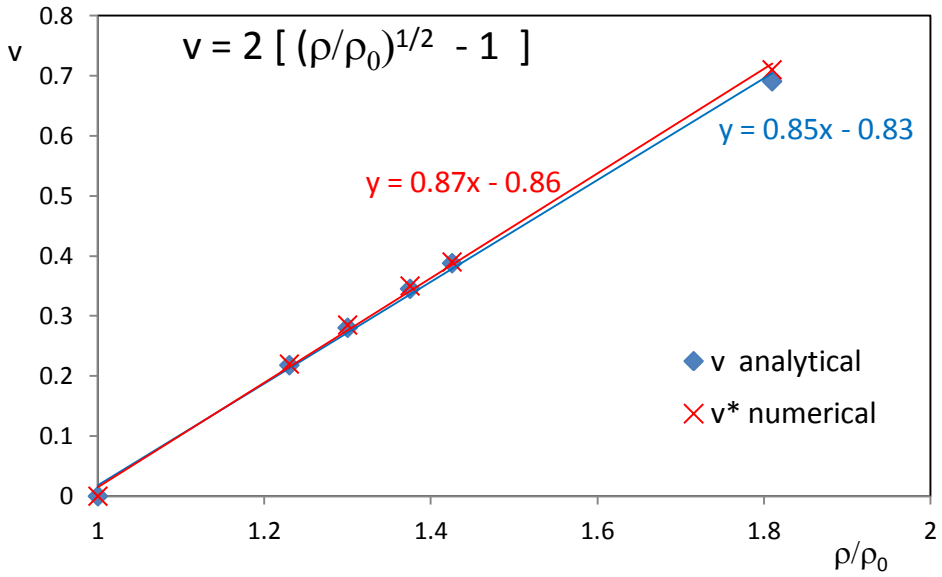
Perp. 1-D freely-prop. simple wave

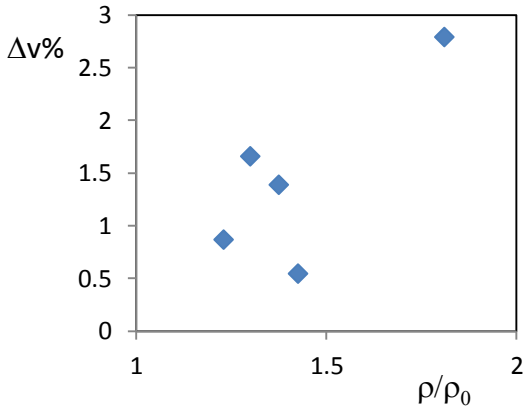


- different boundary conditions; $\beta = 0$
- different ambient conditions and obstacles (1D, 1.5D, 2D, 2.5D)

Perpendicular 1-D Simple Wave

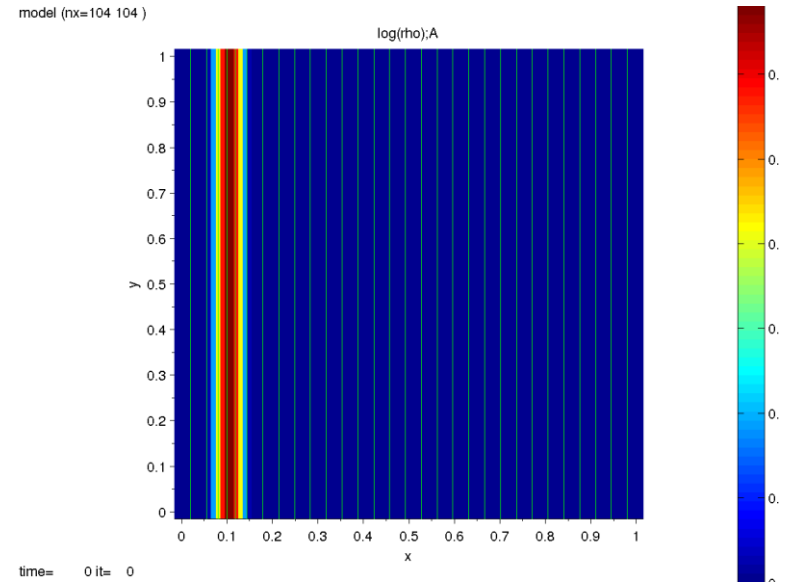


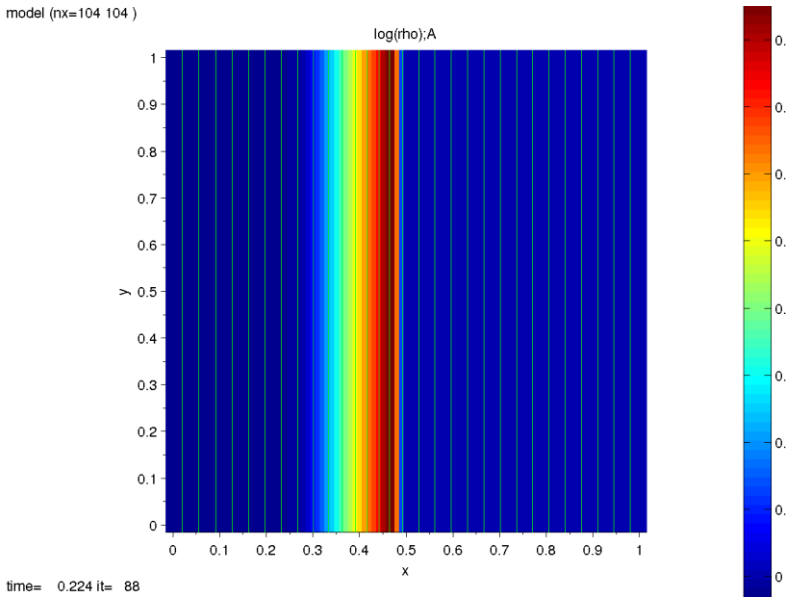


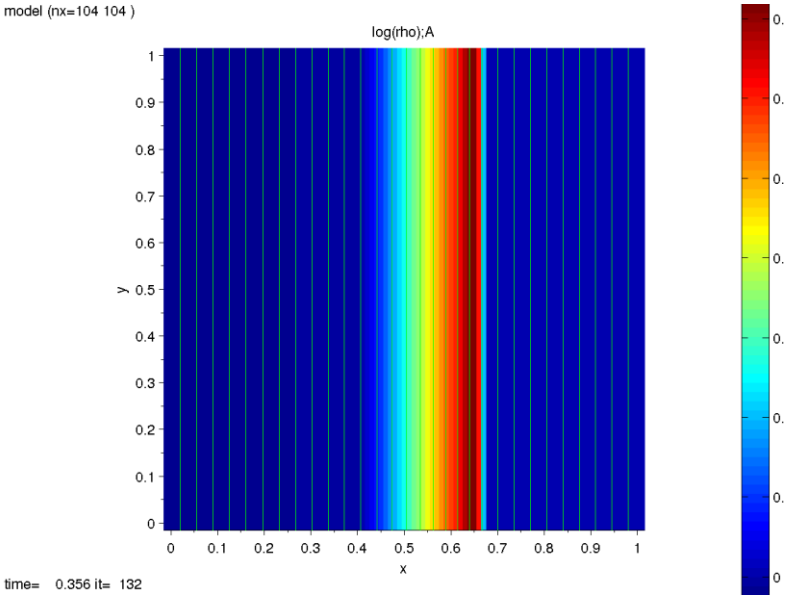


$\beta=0: \quad w = v_{A0} + 3v/2$

Perp. 1-D freely-prop. simple wave

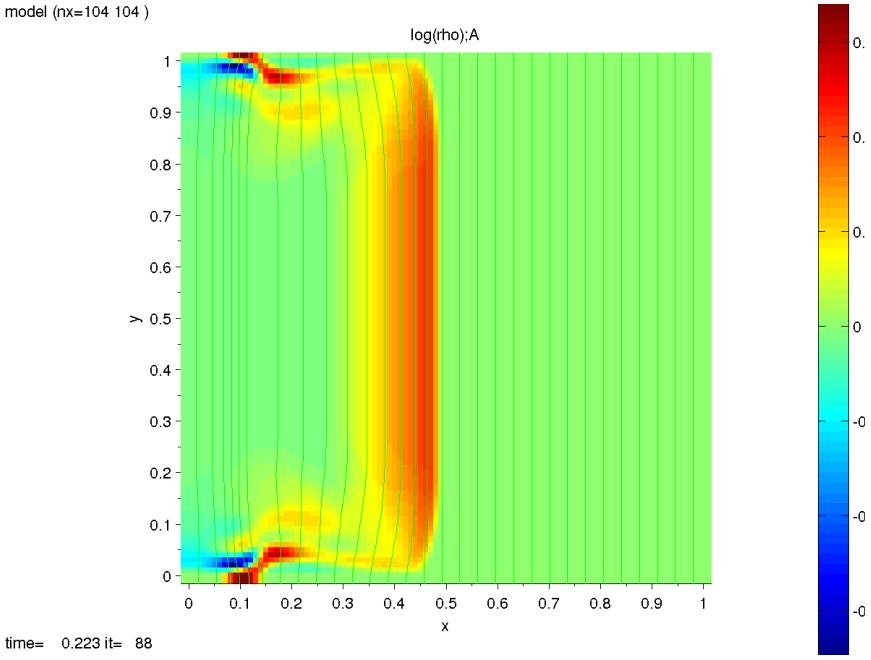


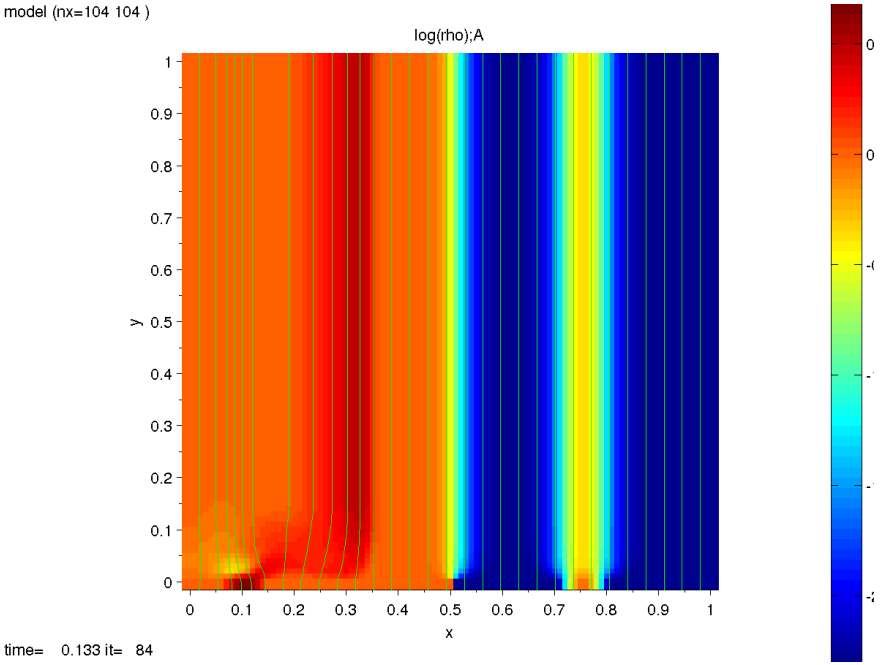




- amplitude decrease
- deceleration
- steepening of the frontal profile
- broadening

Effect of line tying

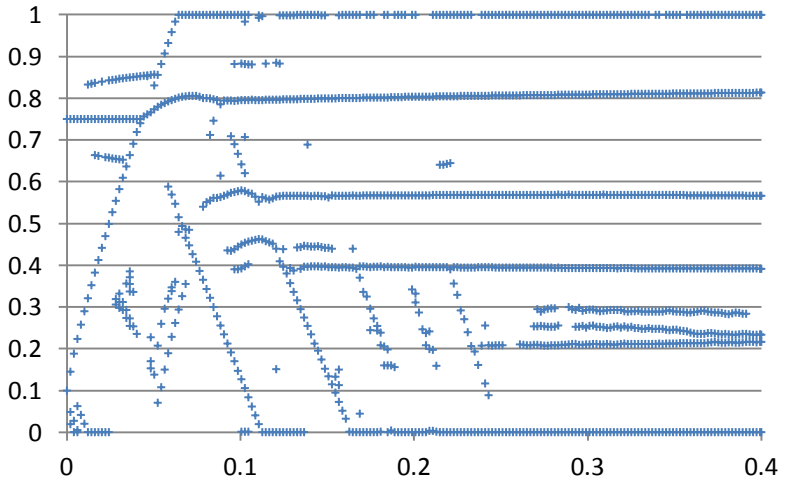


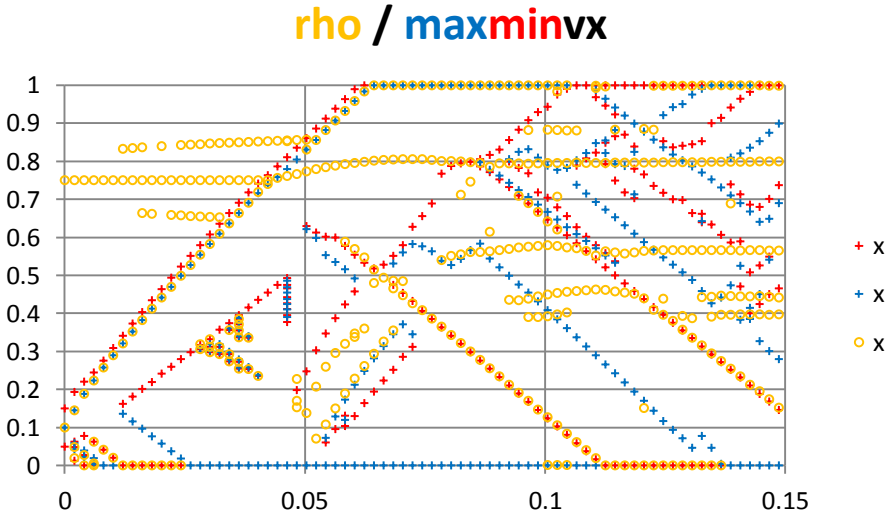


- lower amplitude
- ambient m.f. relaxation
- formation of a trailing dip

Simple Wave –> Dense Obstacle

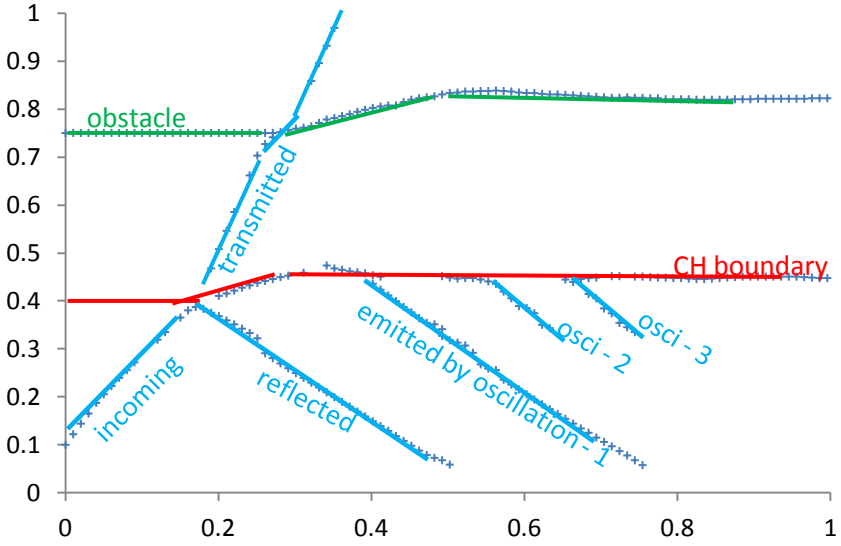
(prominence, streamer, pseudo-streamer)

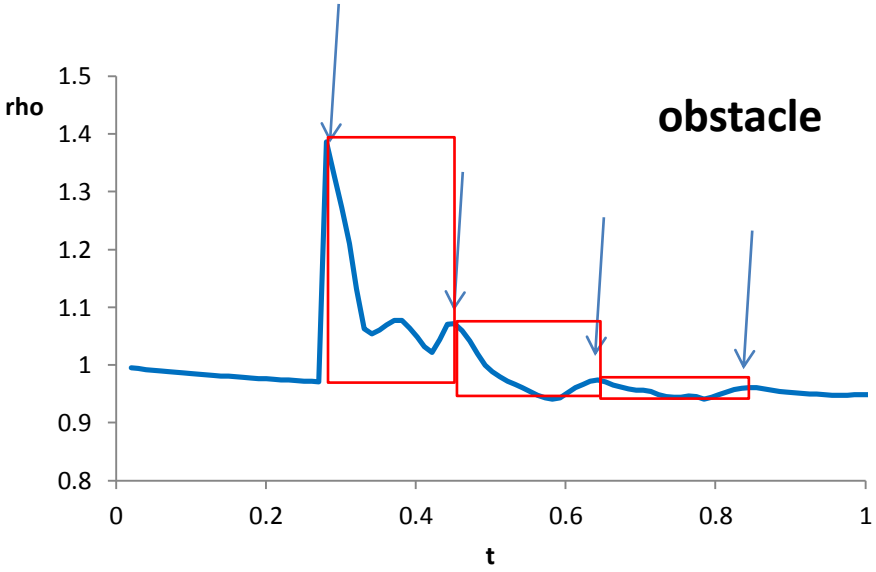




Simple Wave –> Low-Density Obstacle

(coronal hole, cavity)





Perpendicular 1-D Simple Wave

Bxxx

Perpendicular 1-D Simple Wave

Bxxx

Perpendicular 1-D Simple Wave

Bxxx