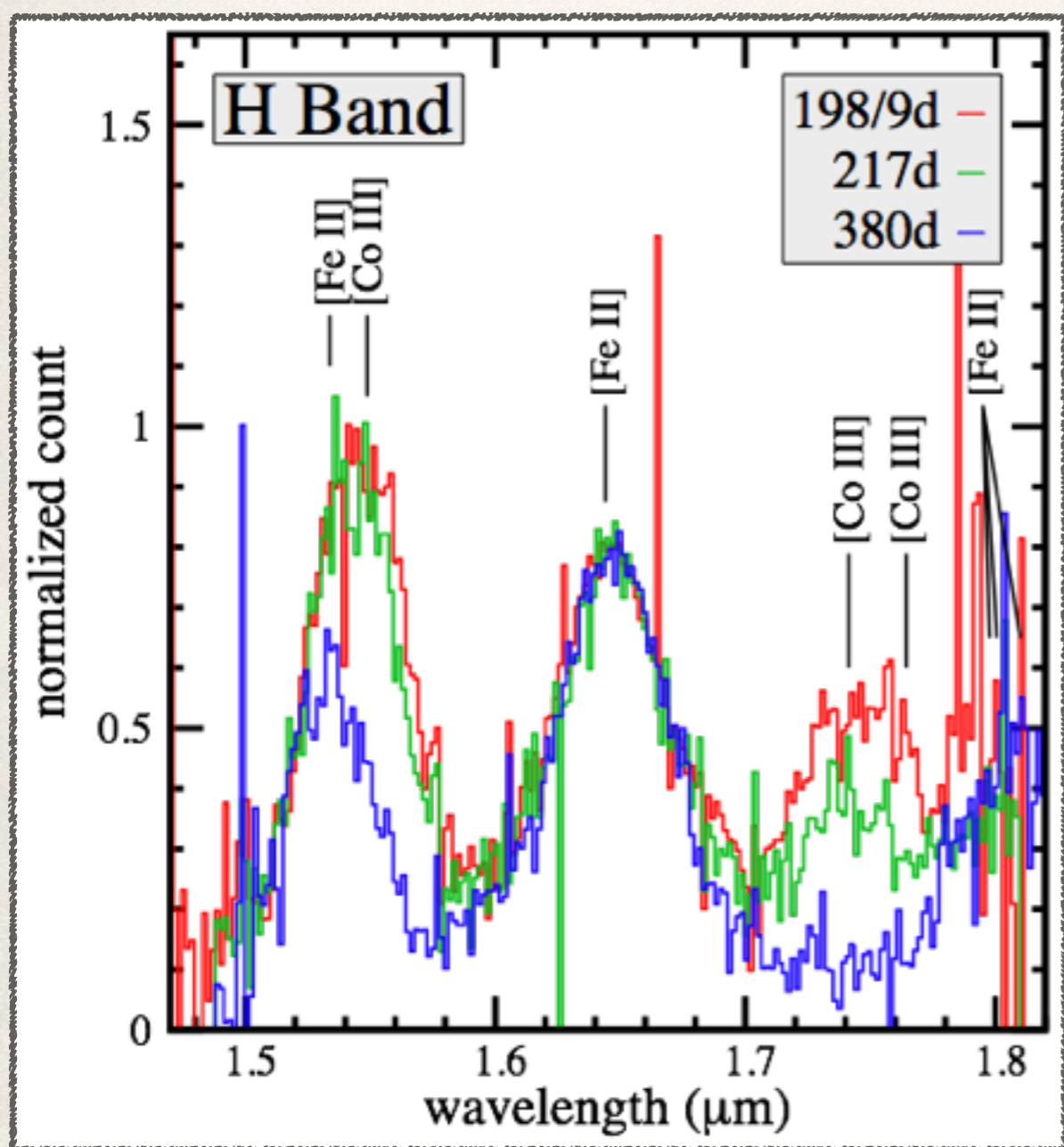


Late-time NIR Spectroscopy of SNe Ia

Tiara Diamond

28 June 2014

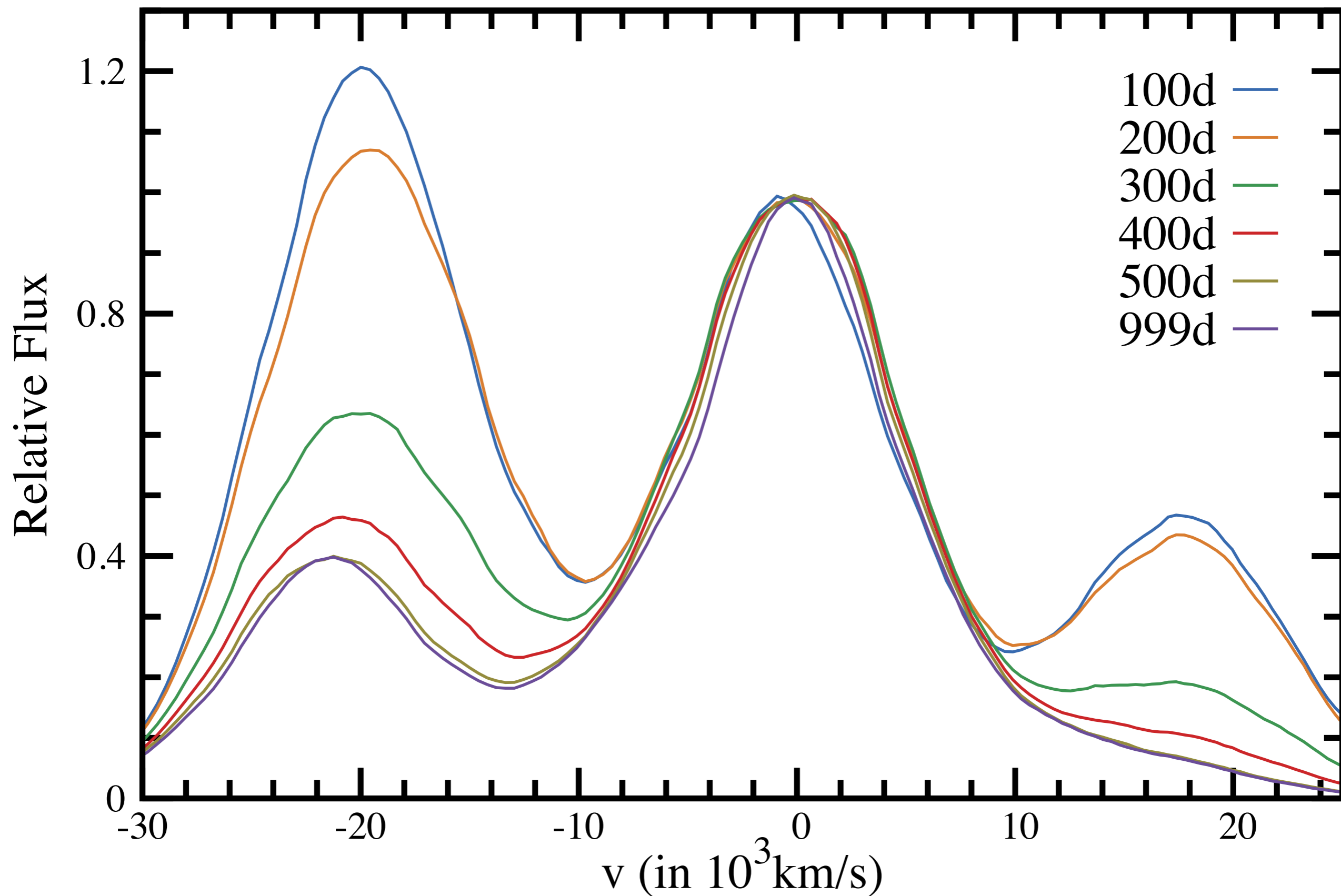
NIR Line Identification



λ (in μm)	line	transition
1.5339	[Fe II]	a
1.5488	[Co III]	a
1.5999	[Fe II]	a
1.644	[Fe II]	a
1.6642	[Fe II]	a
1.6773	[Fe II]	a
1.7413	[Co III]	a
1.7643	[Co III]	a

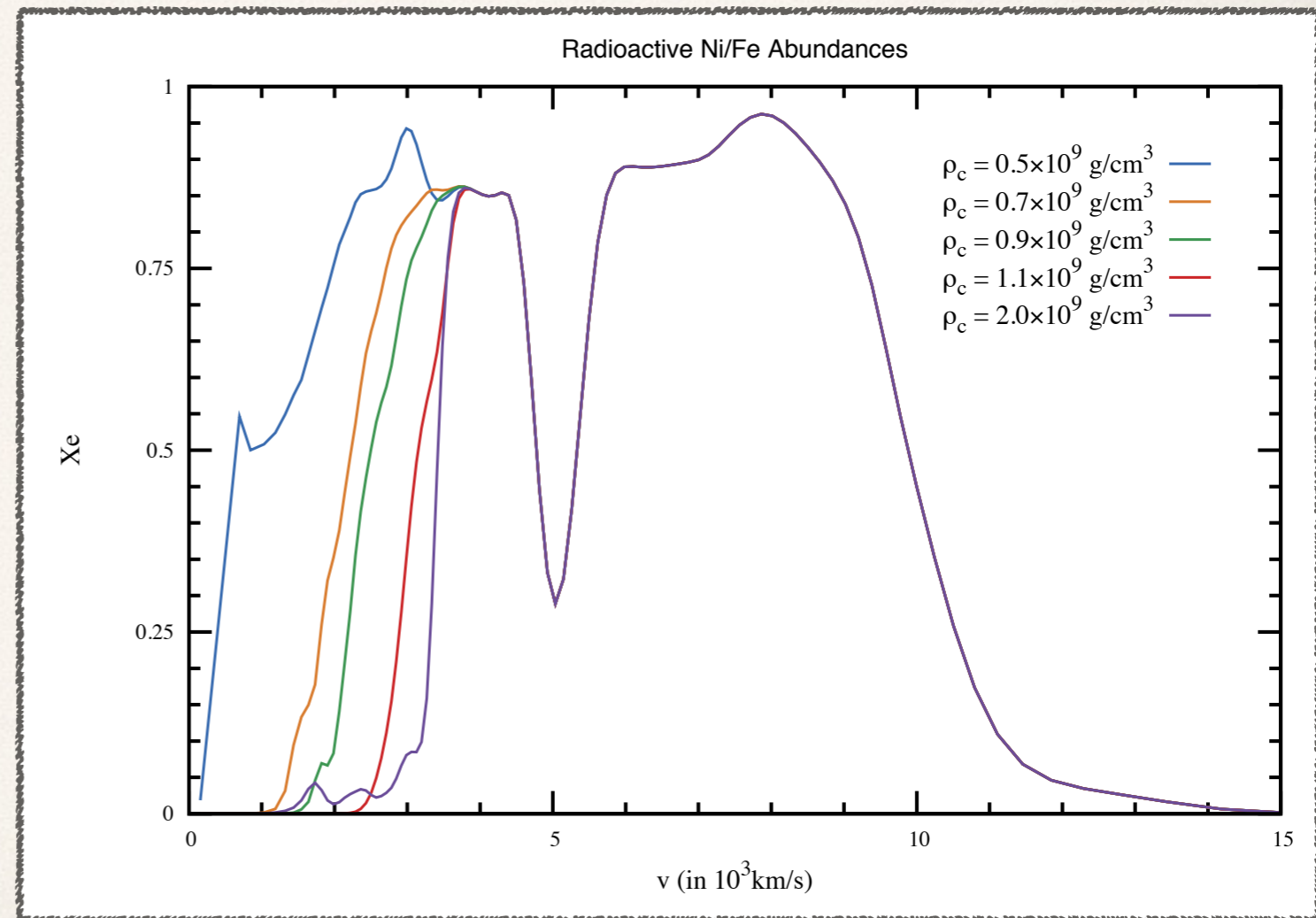
7p0z22d2027g

B = 0G



Effect of Central Density on Spectral Features

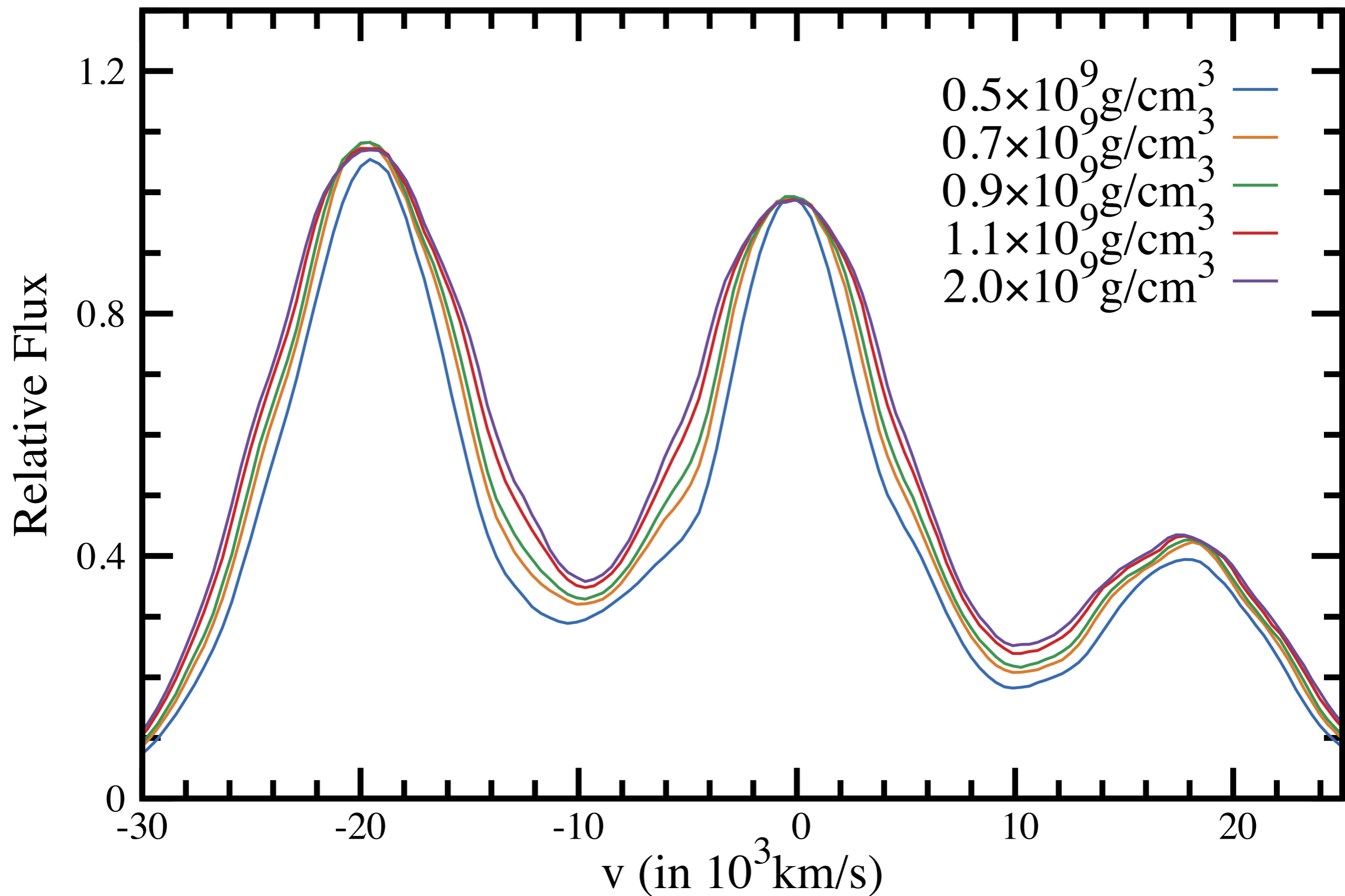
- ❖ densities above $\sim 10^9$ g/cm³ will produce ⁵⁸Ni
- ❖ higher central density increases the size of the central stable region
- ❖ central stable region lacks positrons and doesn't contribute to the emission line



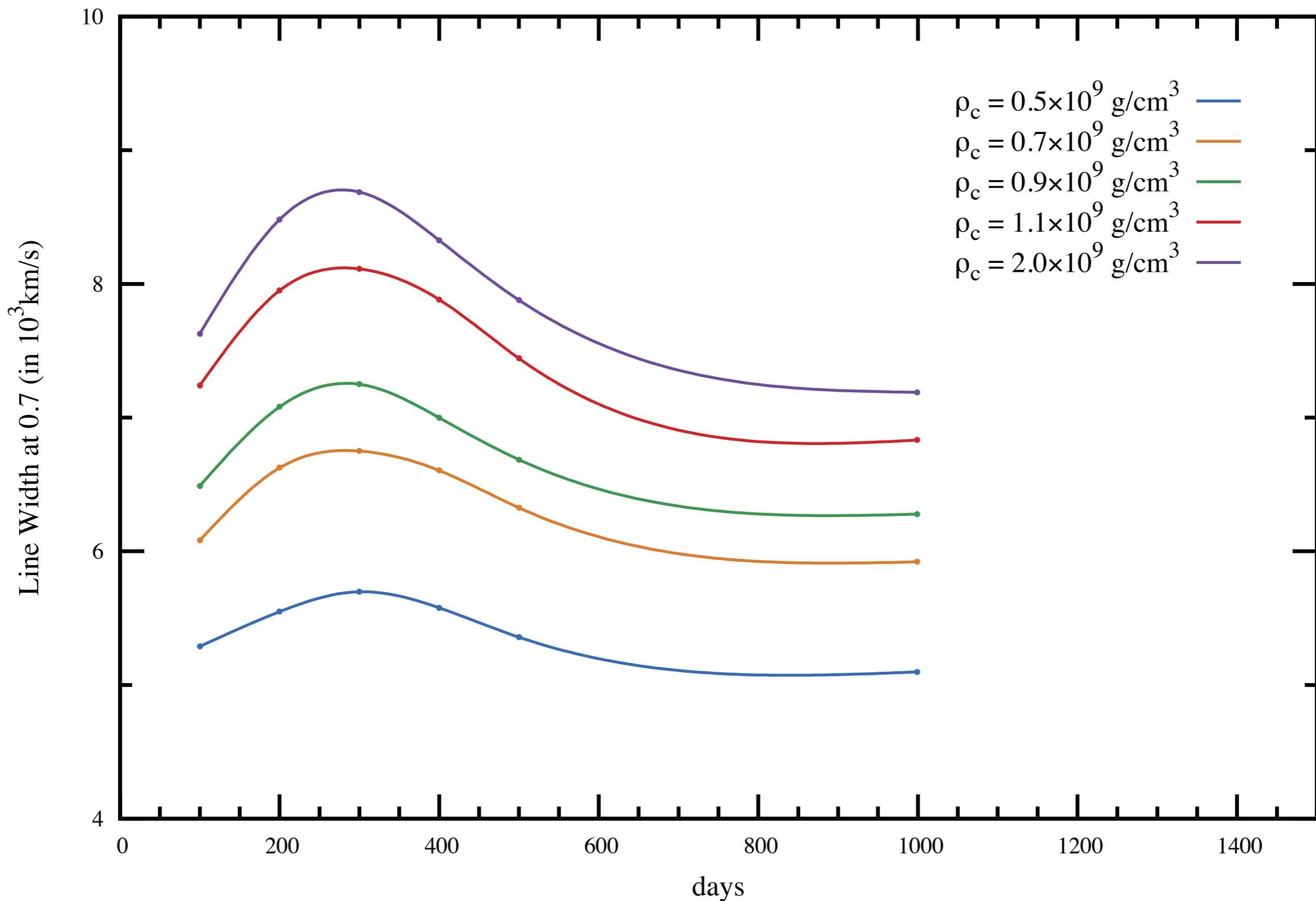
All Models

200d

B = 0G



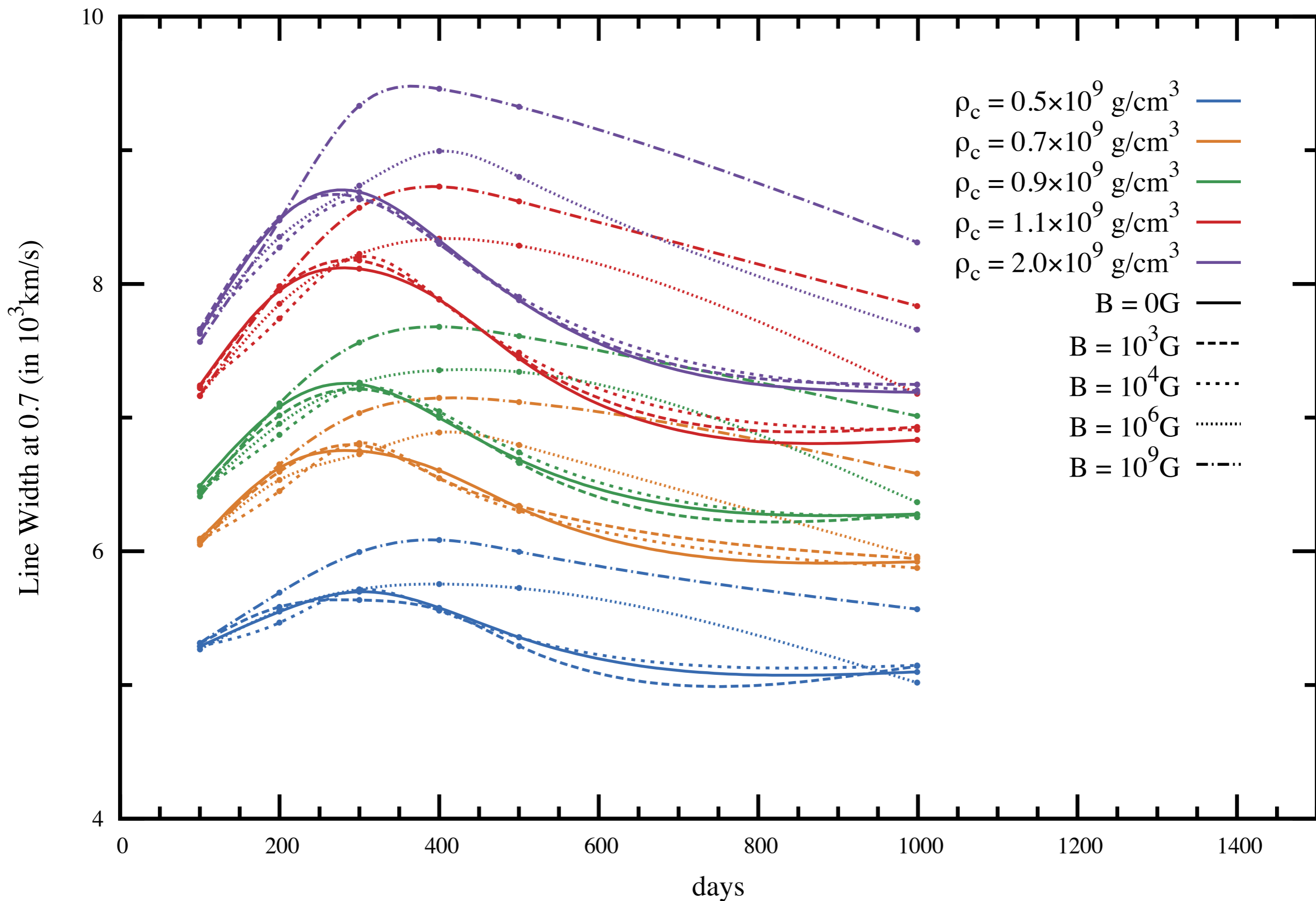
Model Line Widths $B = 0\text{G}$



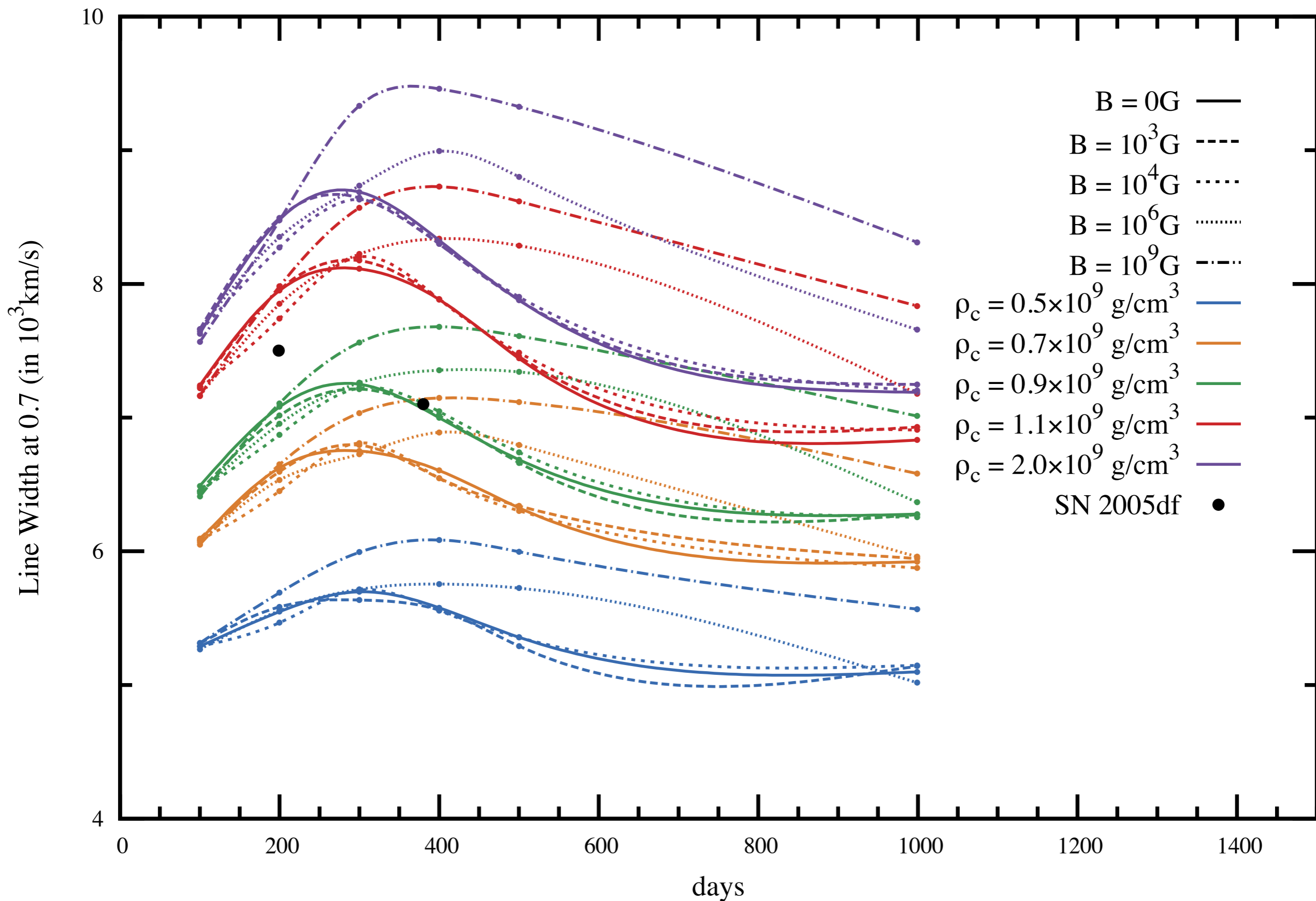
Effect of Magnetic Fields on Spectral Features

- ❖ doesn't have effect until later times (300+days) because at "intermediate" times, positrons are still locally confined
- ❖ in general, higher B-fields keep positrons locally confined for longer

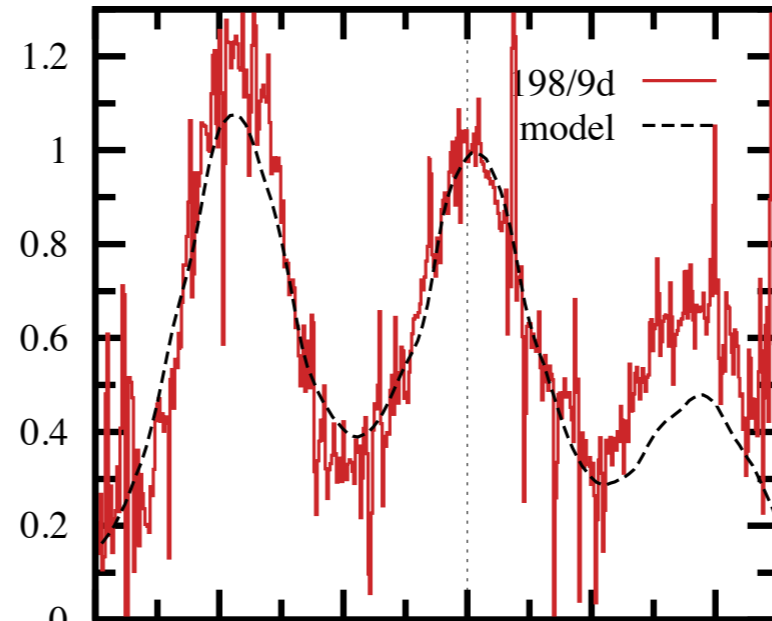
Model Line Widths



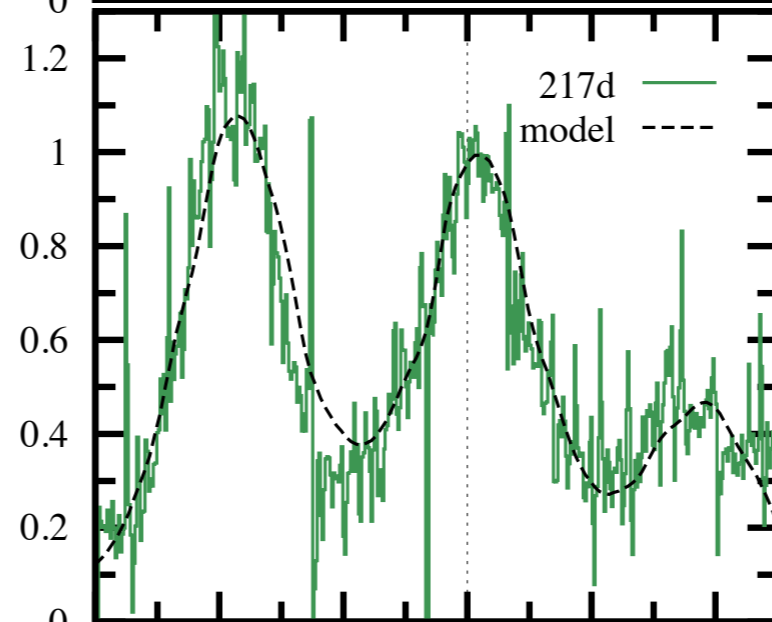
Model Line Widths



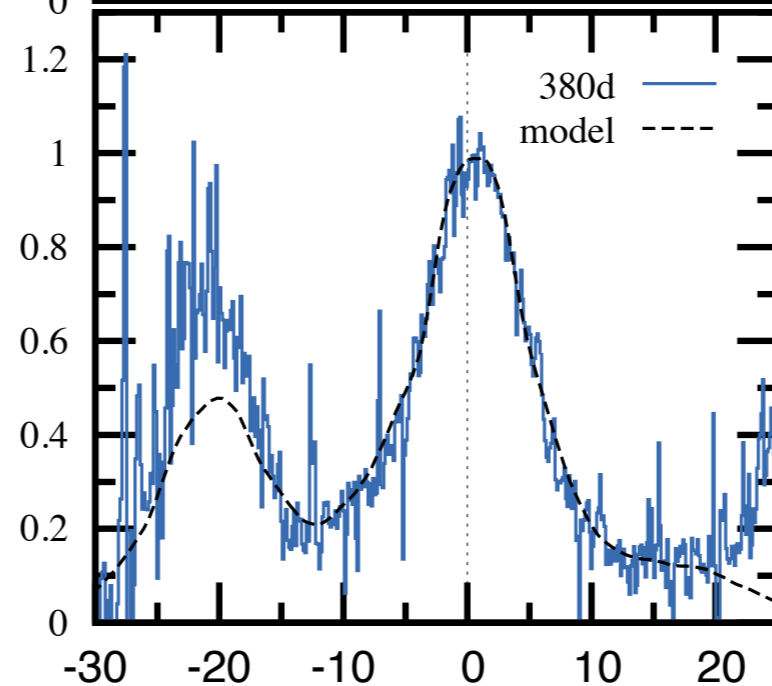
Relative Flux



Relative Flux



Relative Flux



v (in 10^3 km/s)

Effect of Viewing Angle on Spectral Features

