

Introduction

- Observational constraints on models.
 - Earliest times, maybe unburned material at HV.
 - Early phase, IME's dominate.
 - Around max and later, Fe-peak turns on.
- Implications in older 1D models
 - Pure detonations ruled out – they only make nickel.
 - Tuned deflagrations do okay – need mixing.
 - Delayed detonation – may get energy/comp right.
 - However, DDT's all parameterized somehow in 1D.

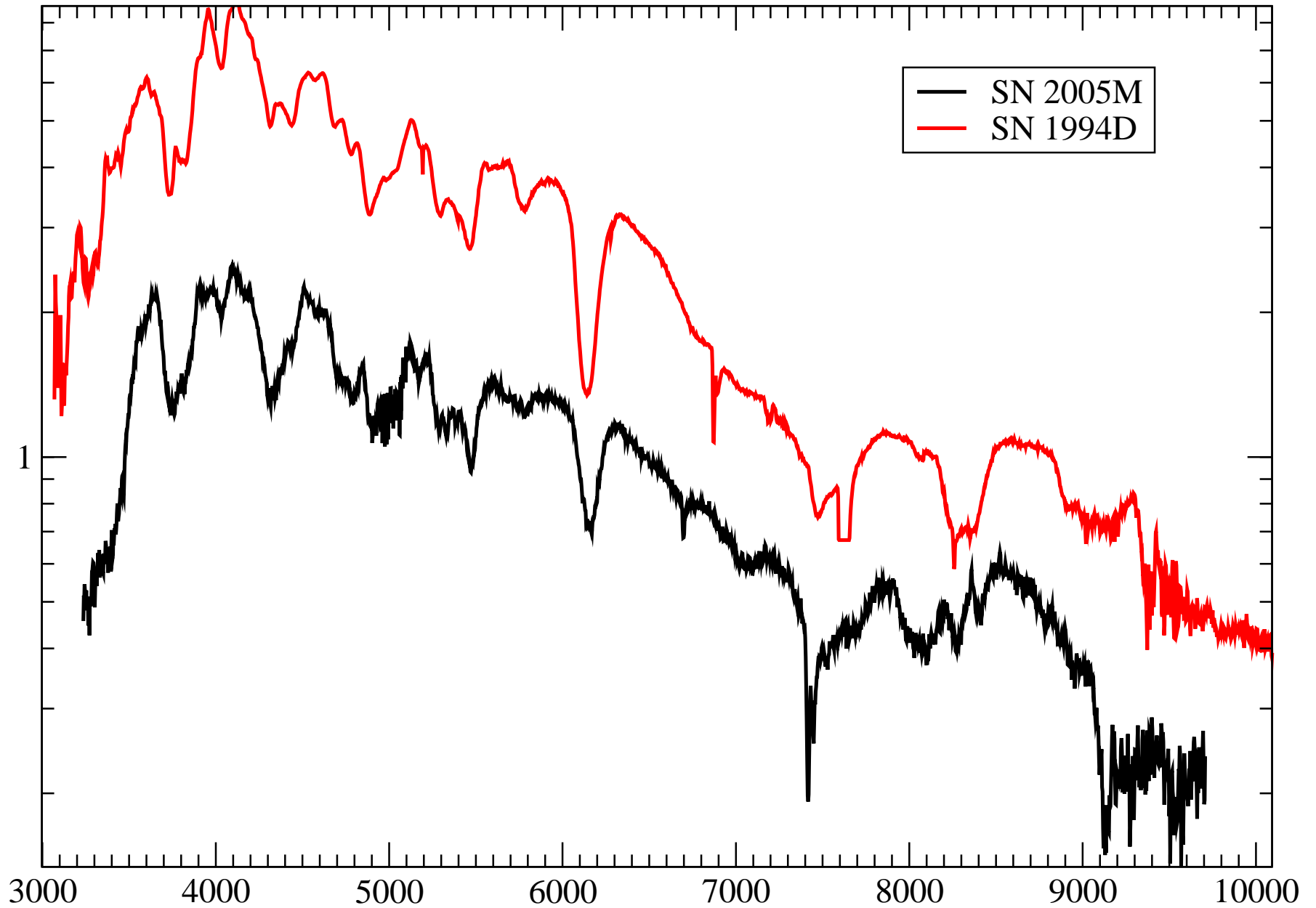
Recent Theory

- 3D Models
 - Khokhlov, Gamezo (first 3D def, but favor DD)
 - Hillebrandt (favor deflagrations)
 - Livne (2D – ODD?), others.
- If DDT, how to make transition? GCD?
 - FLASH group (general code)
 - Start off-center deflagration bubble.
 - Rises to surface, breaks out and spreads.
 - Streams cross, compress, start det.

Recent Observations

- HV material in SNe Ia.
- V's like 15000 to 25000 km s⁻¹.
 - 1984A – Strong Si II at HV.
 - 1994D – HV Ca II and Fe II
 - 1999ee, 1998es – HV Ca II
 - 2000cx – HV Ca II in clump? Other metals? H?
 - 2001el – HV Ca II – polarized!
 - 2003du – HV Ca II ... circumstellar?
 - 2004dt – like 1984A.

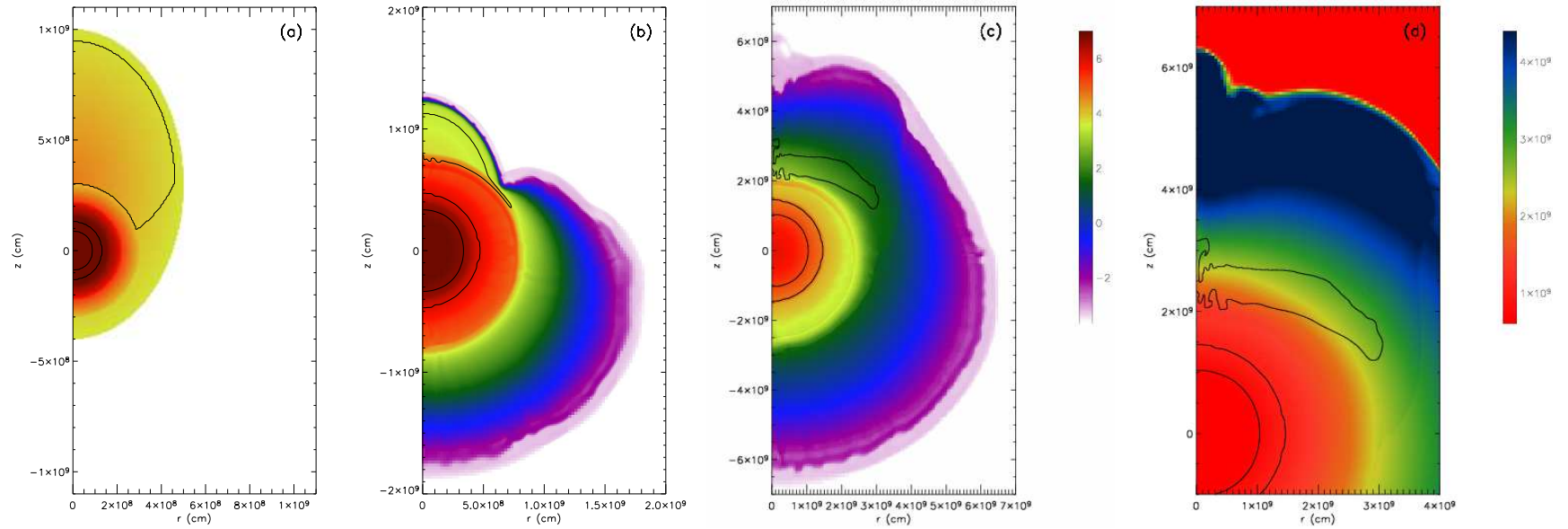
SN 2005M



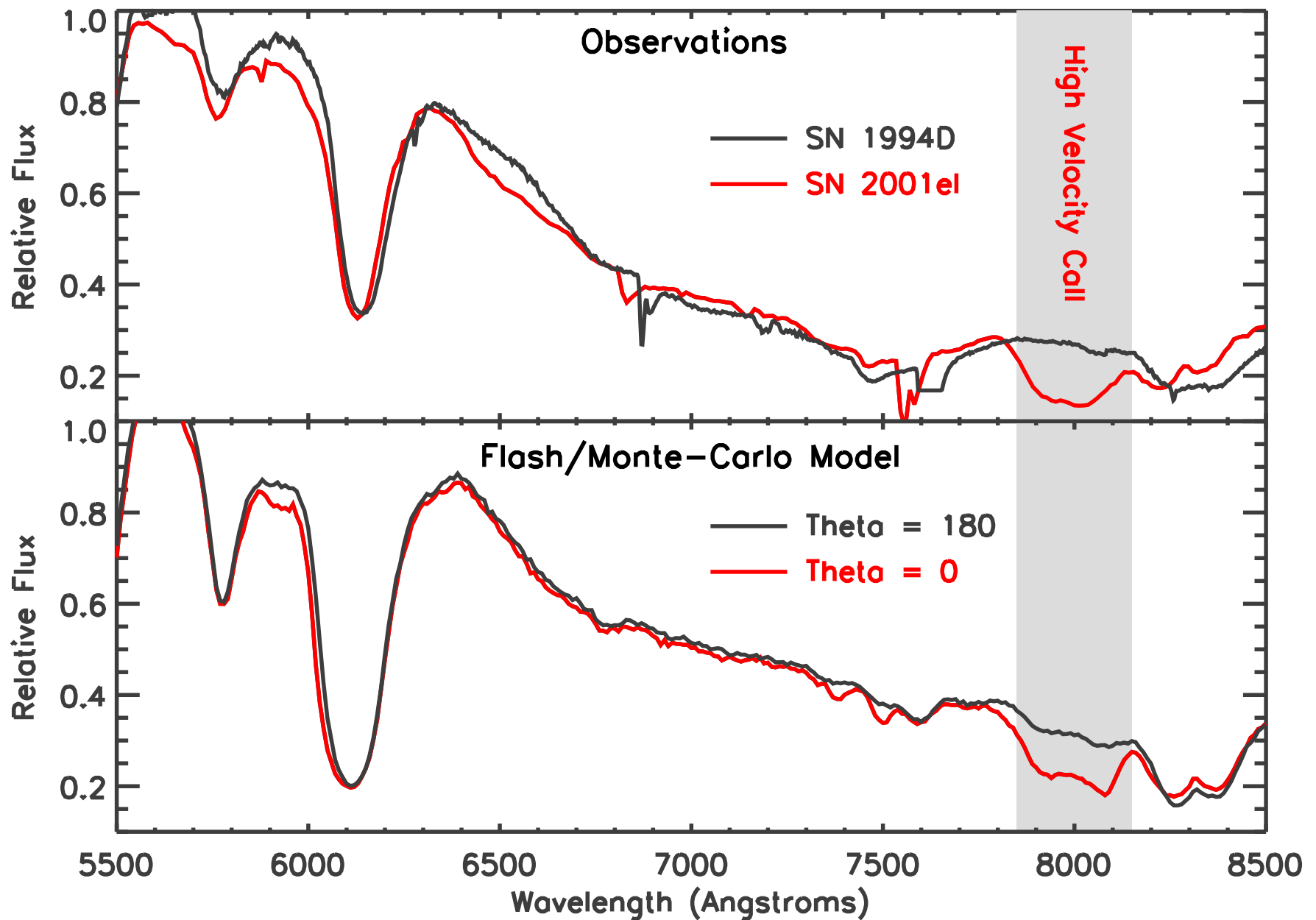
This Paper

- GCD makes a metal-rich blob at HV?
- What do spectra look like? Like 01el?
- FLASH model incomplete.
 - Detonation not followed explicitly.
 - W7 inserted by fiat!
 - Point is, GCD may make HV features.
 - ... HV natural consequence of GCD?

Kasen & Plewa



Kasen & Plewa



Kasen & Plewa

