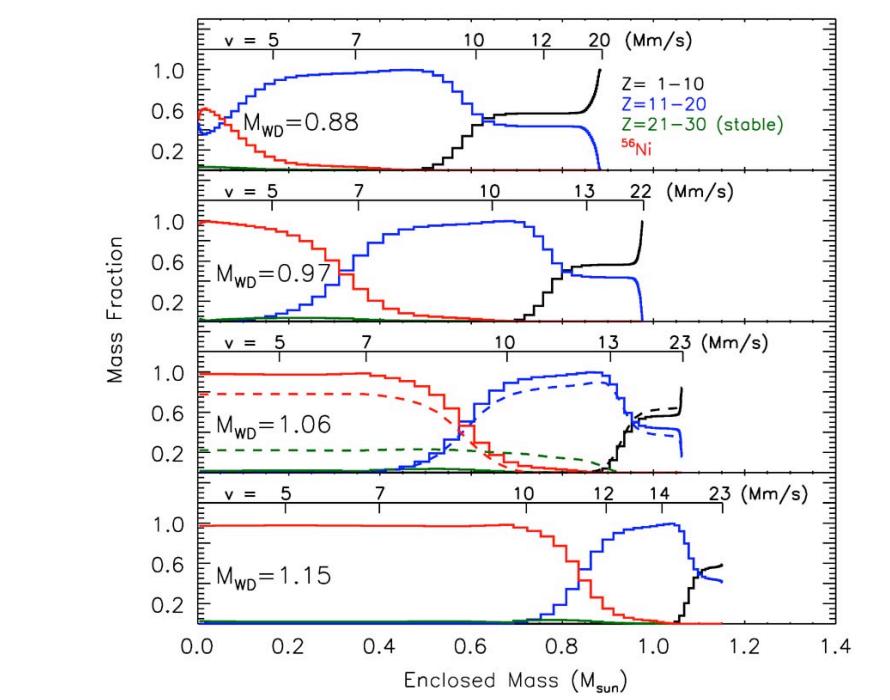
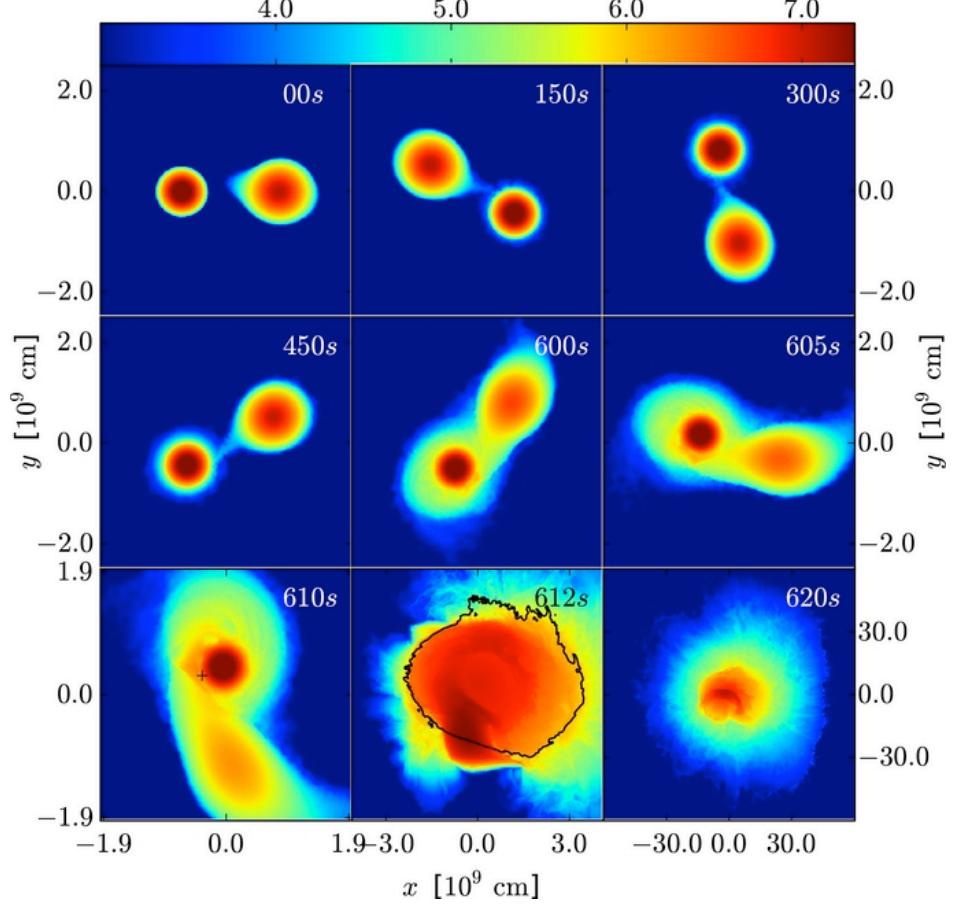
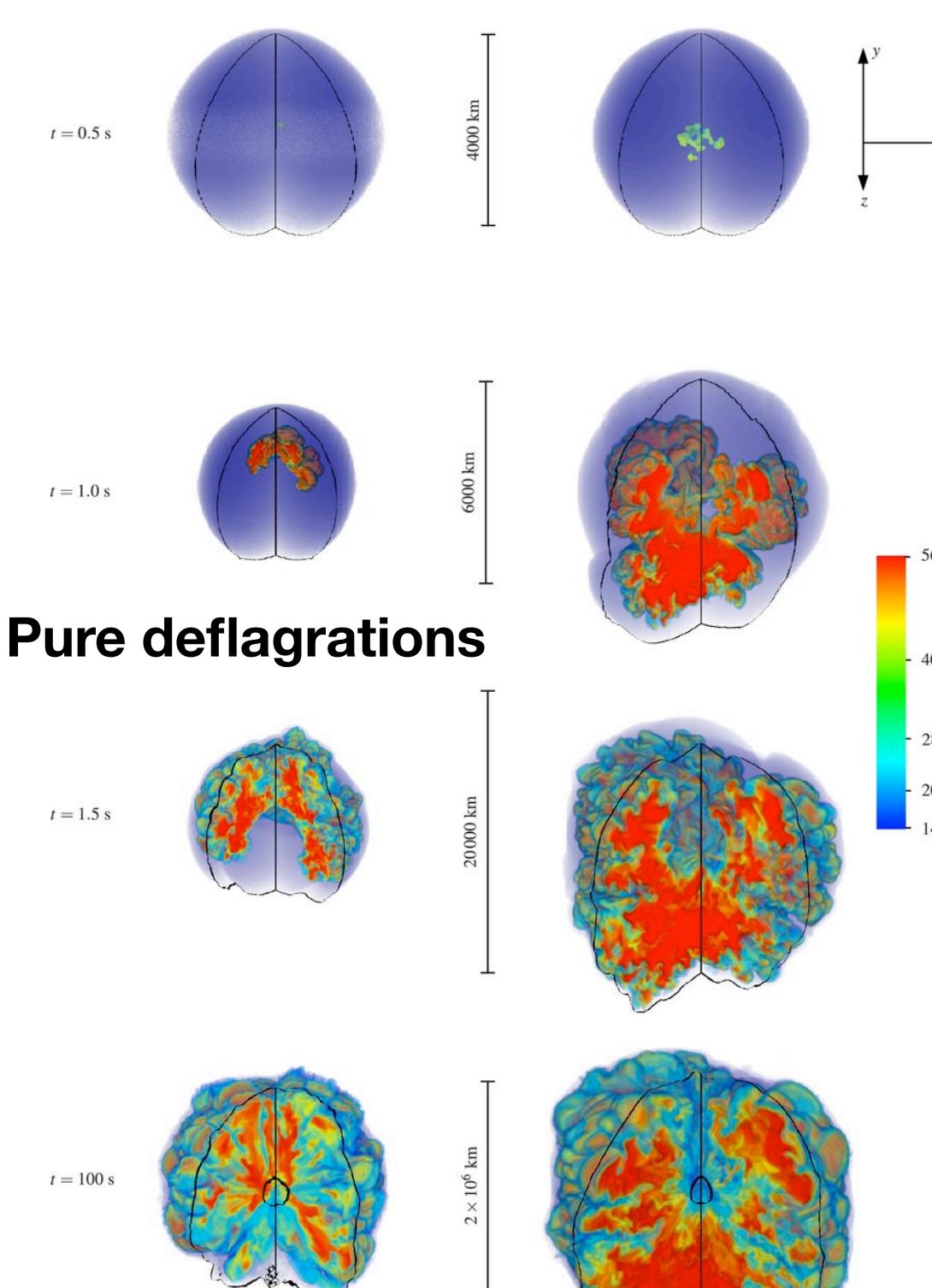


Spectral modelling of supernovae using emulation

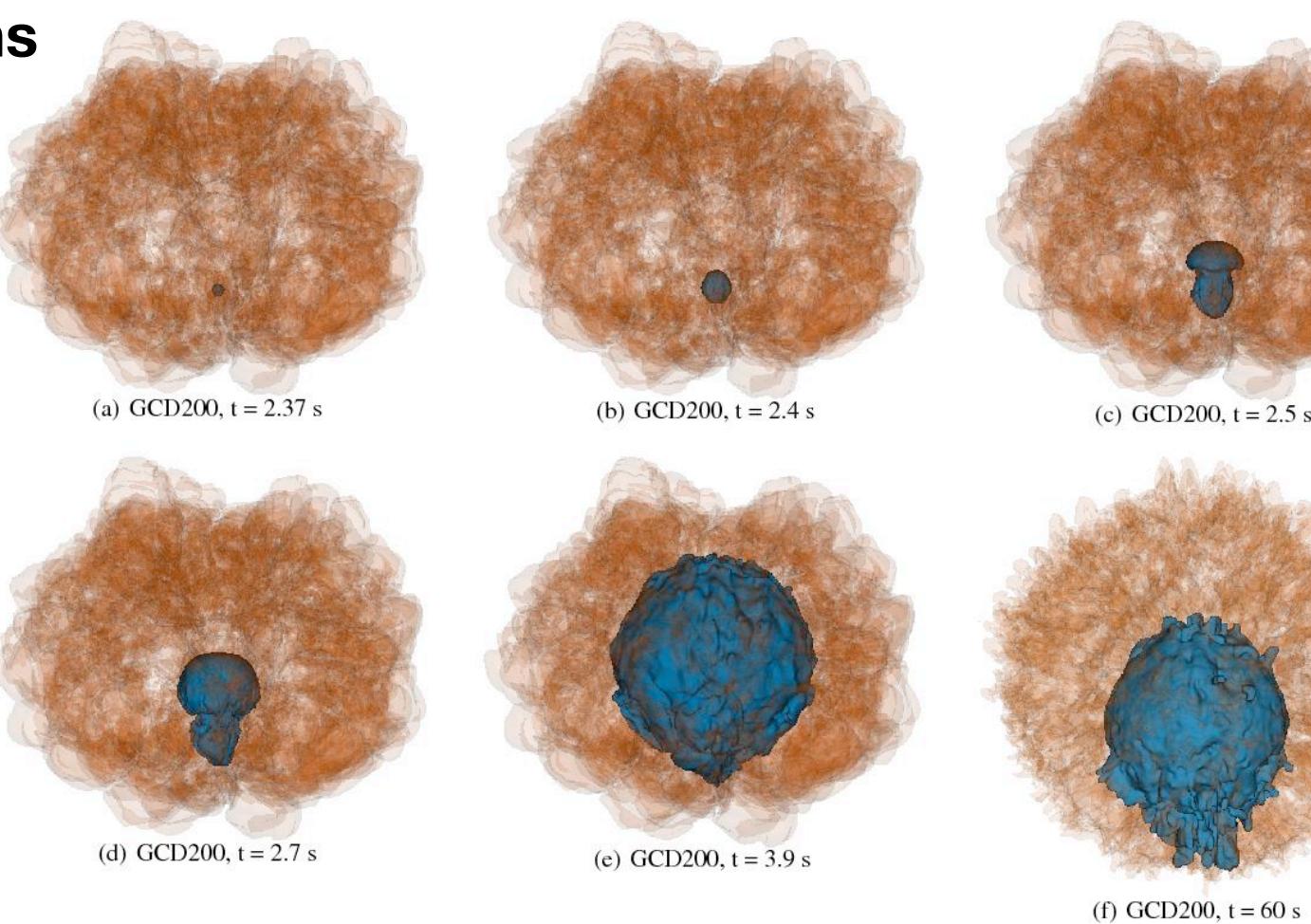
Violent mergers



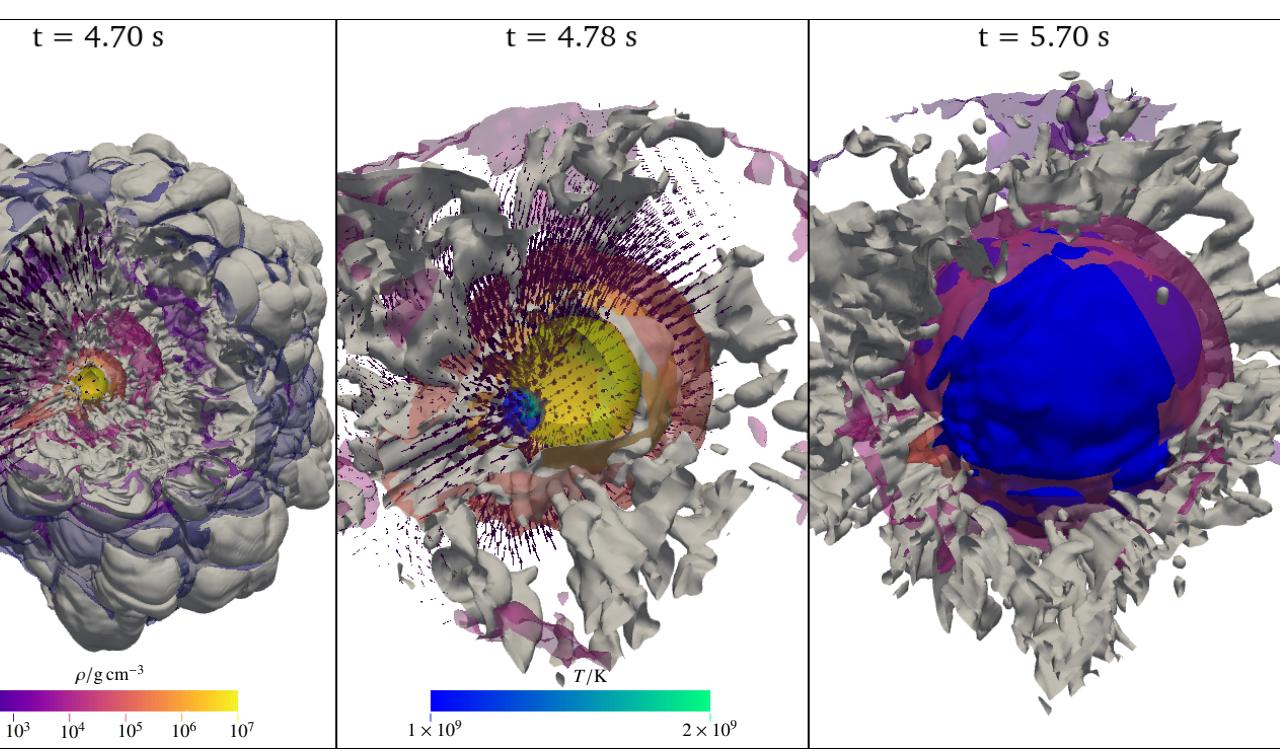
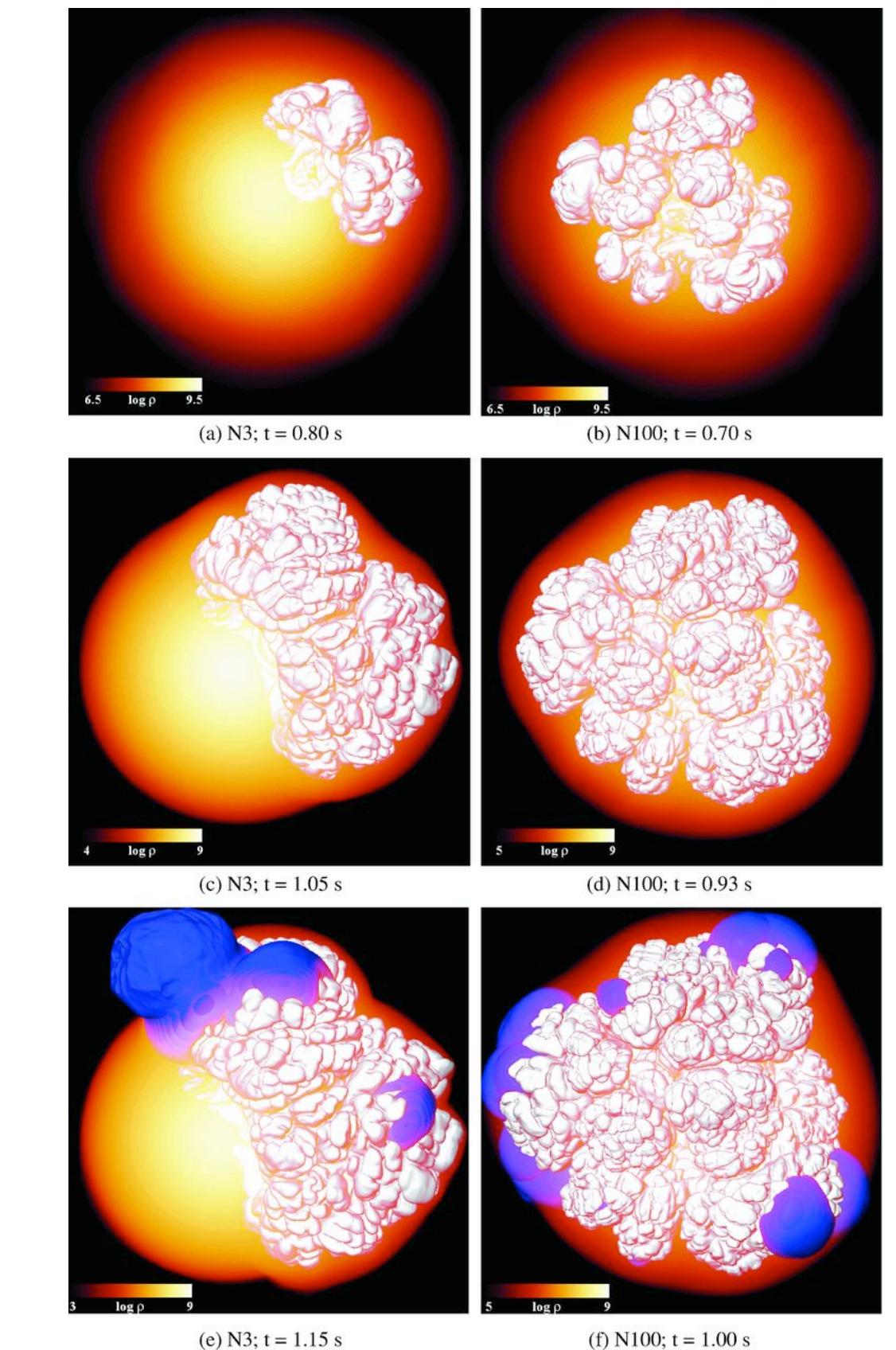
Pure deflagrations



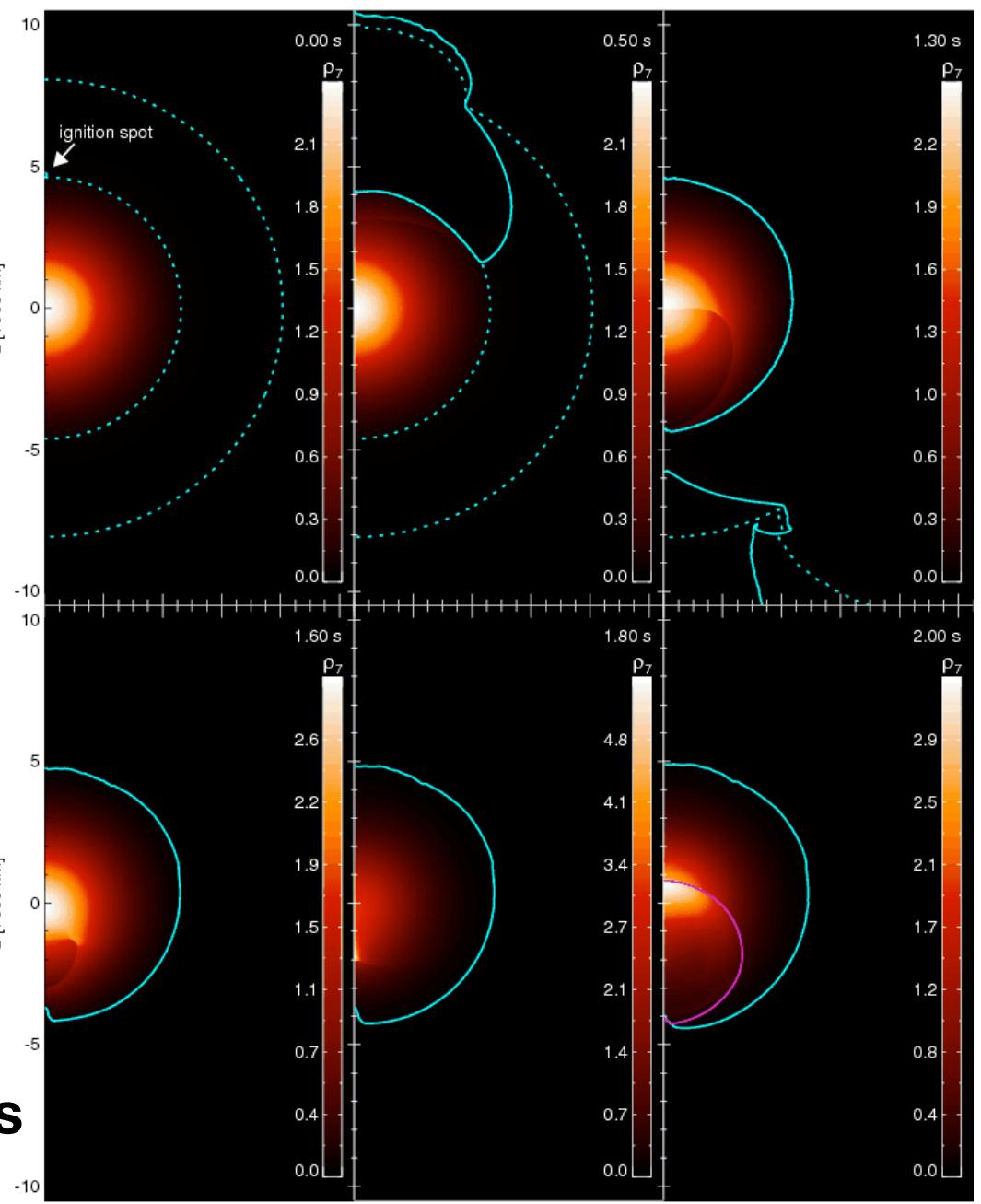
Gravitationally confined detonations



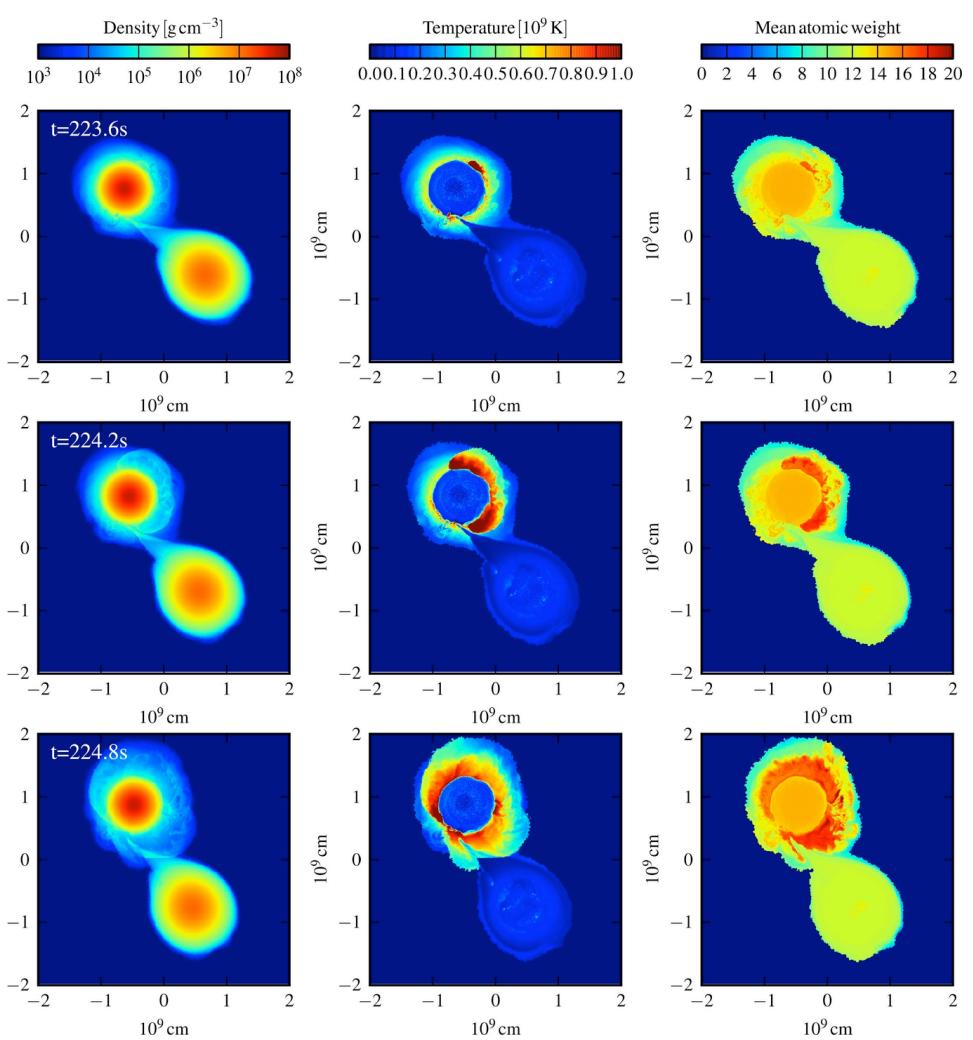
Deflagration to detonation transitions



Pulsational delayed detonations



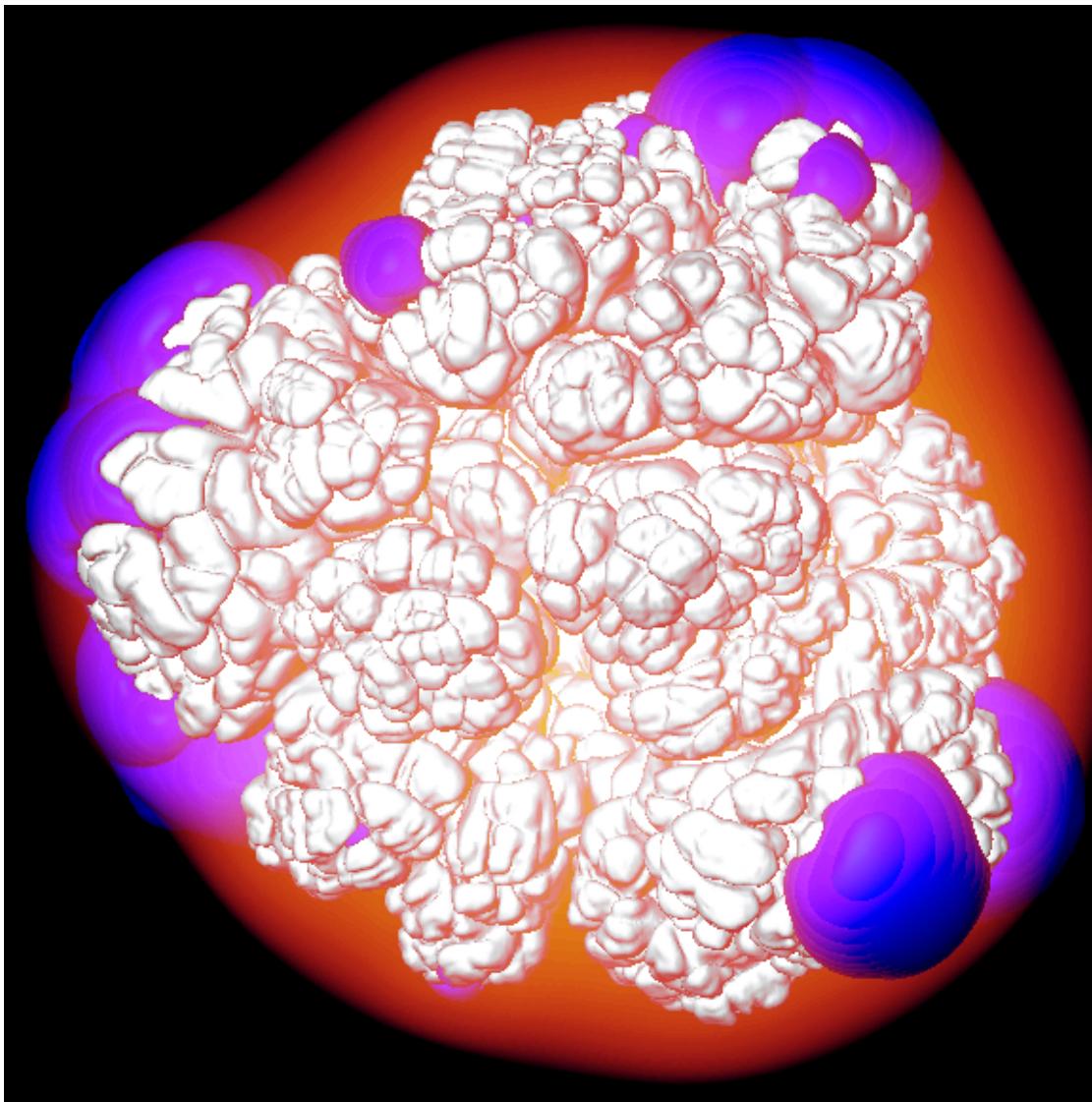
Double detonations



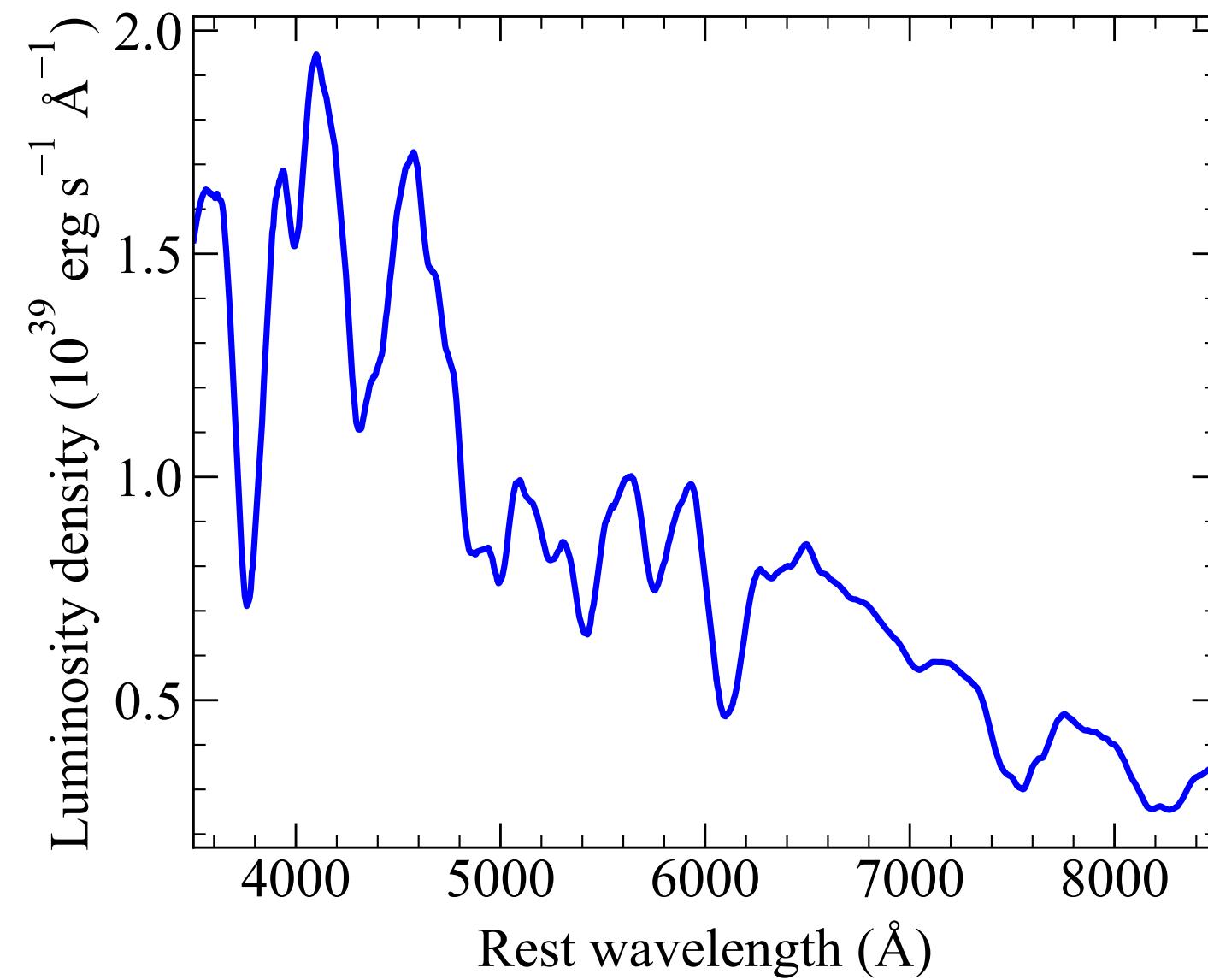
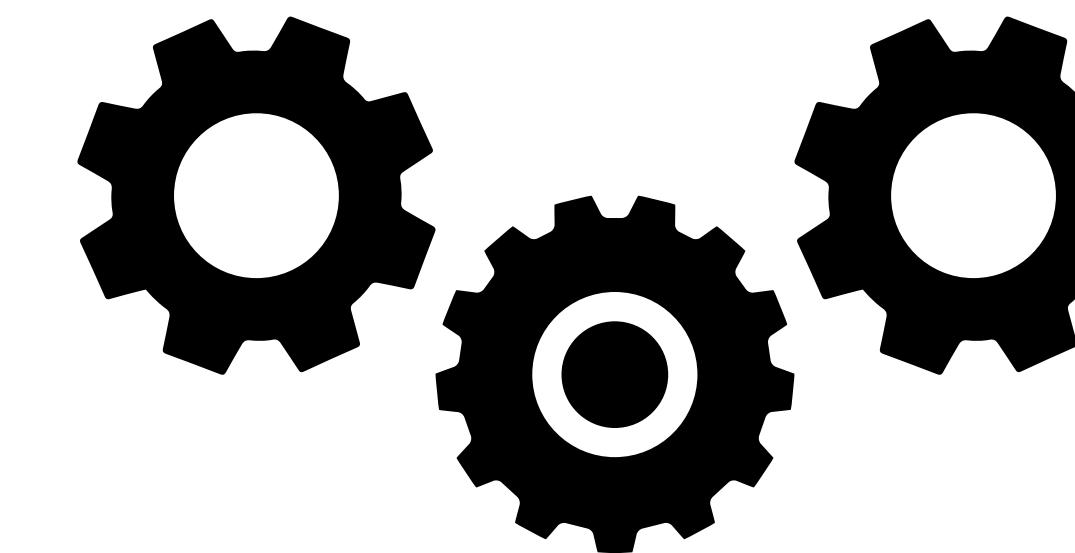
Dynamically driven double degenerate double detonation

And more!

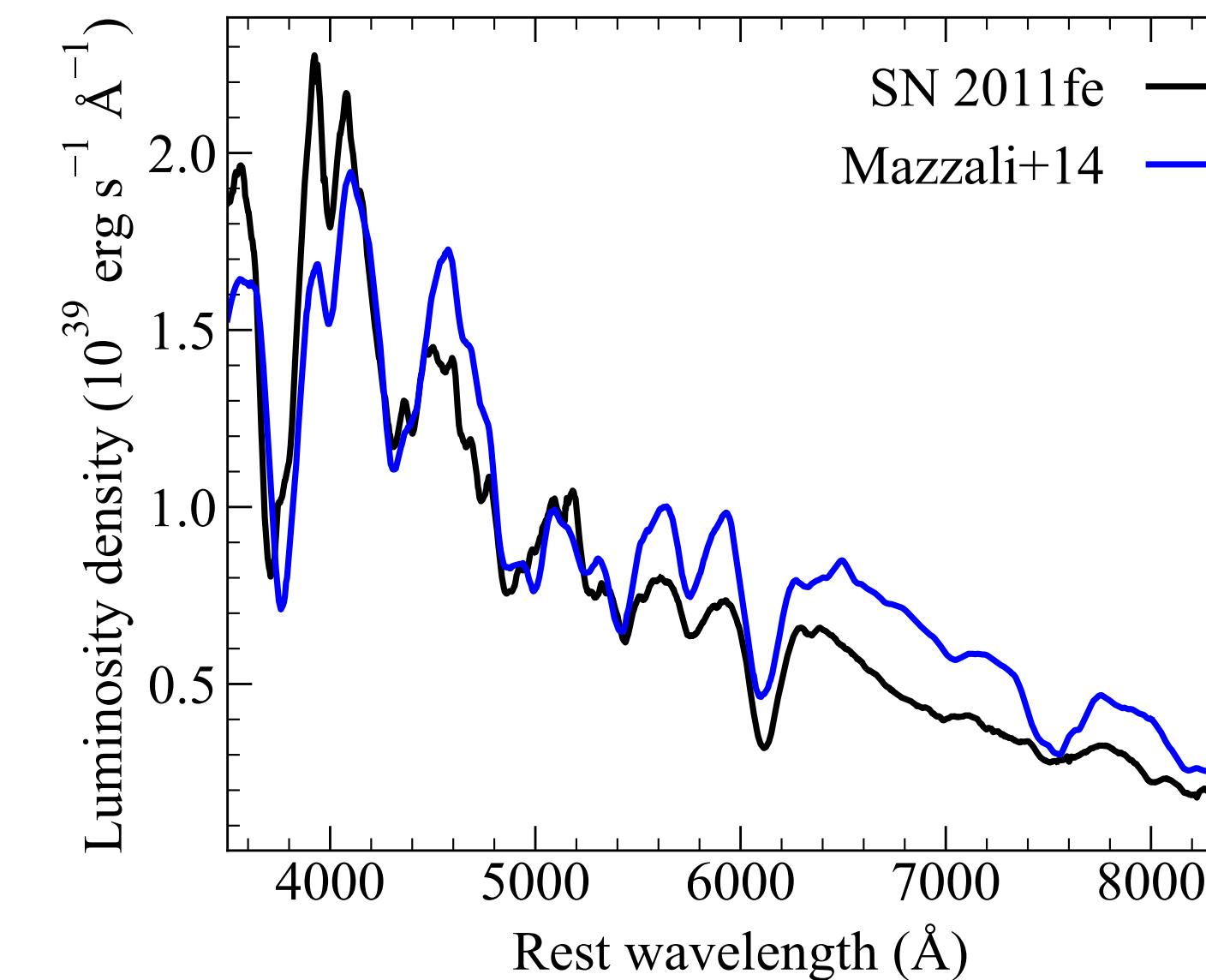
time of explosion
temperatrue
etc.



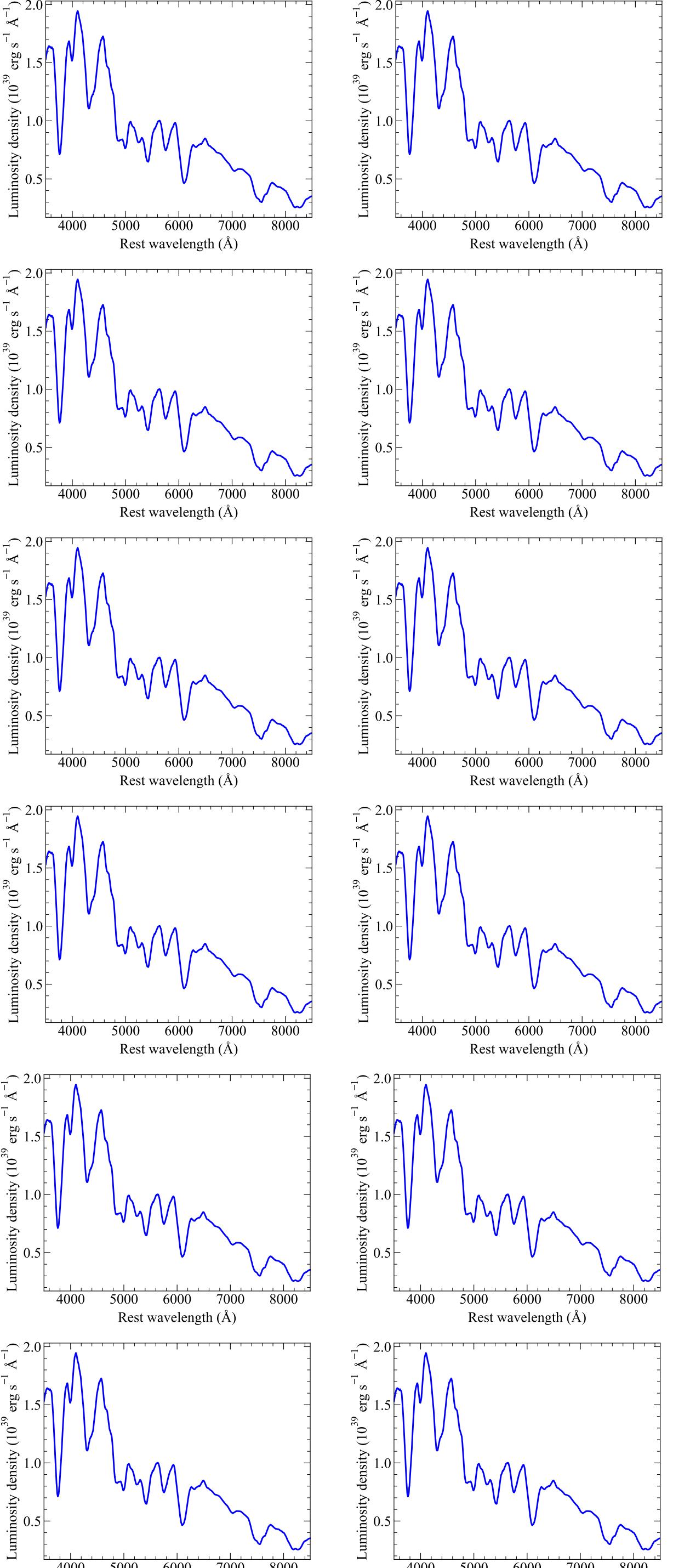
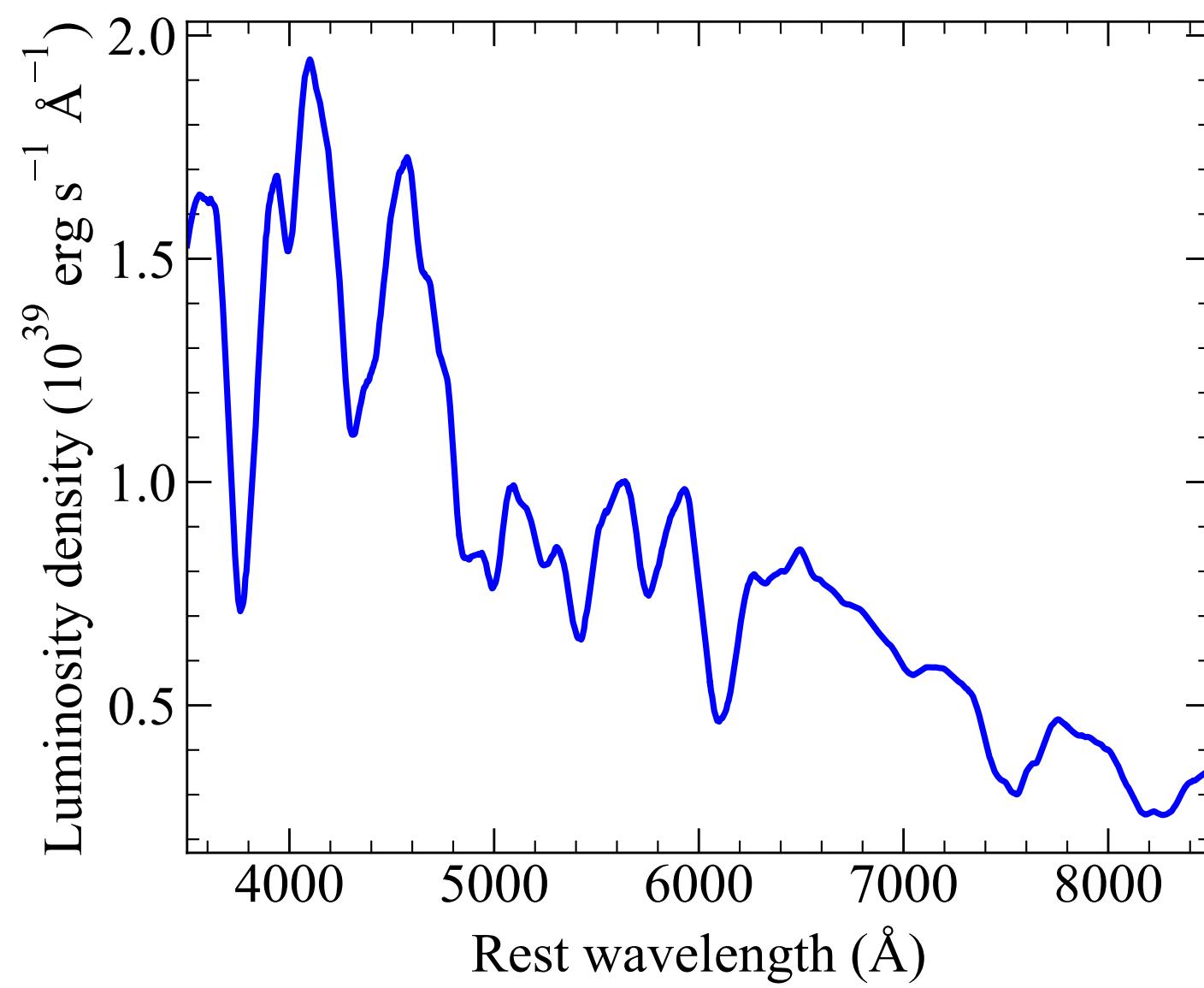
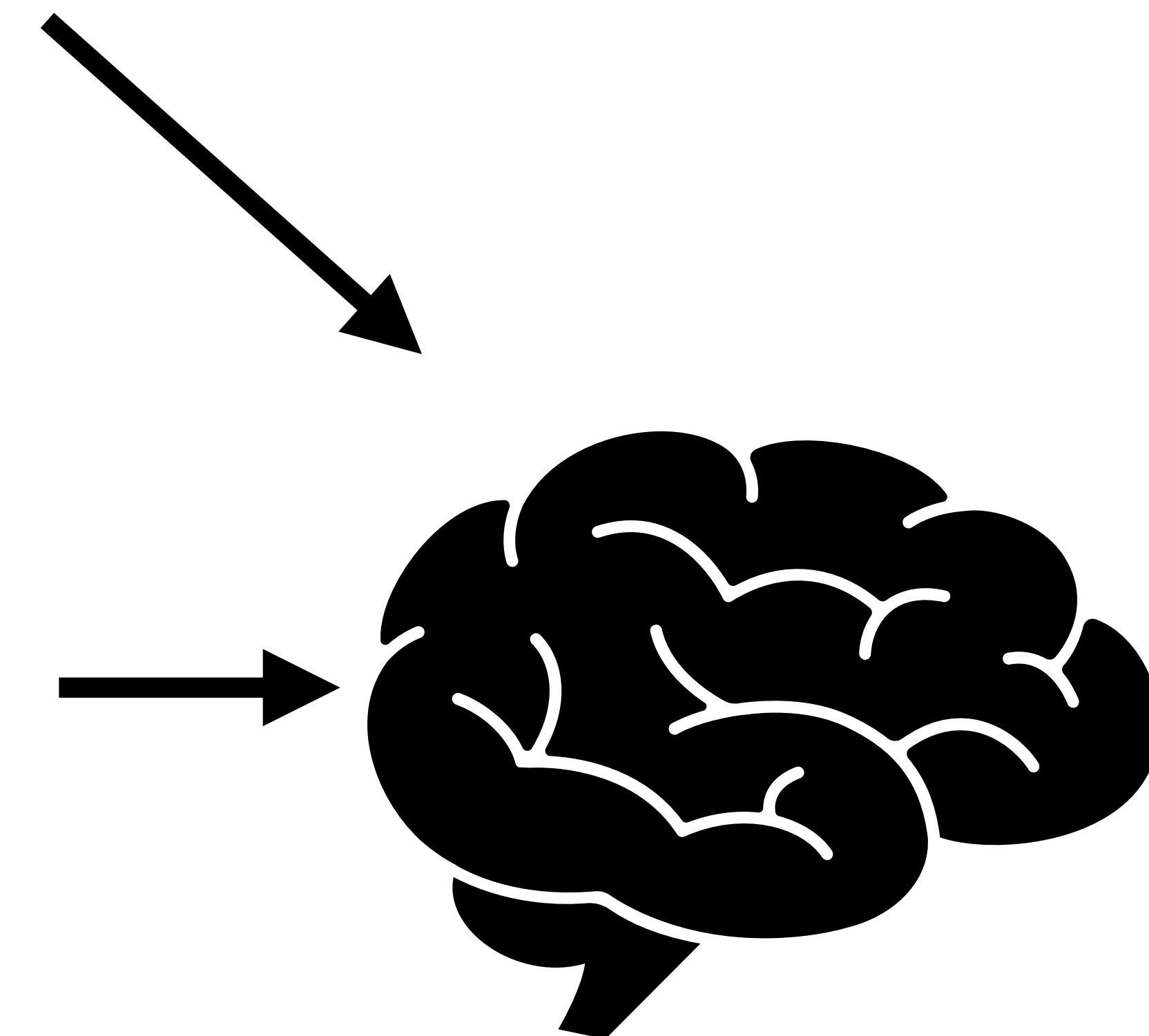
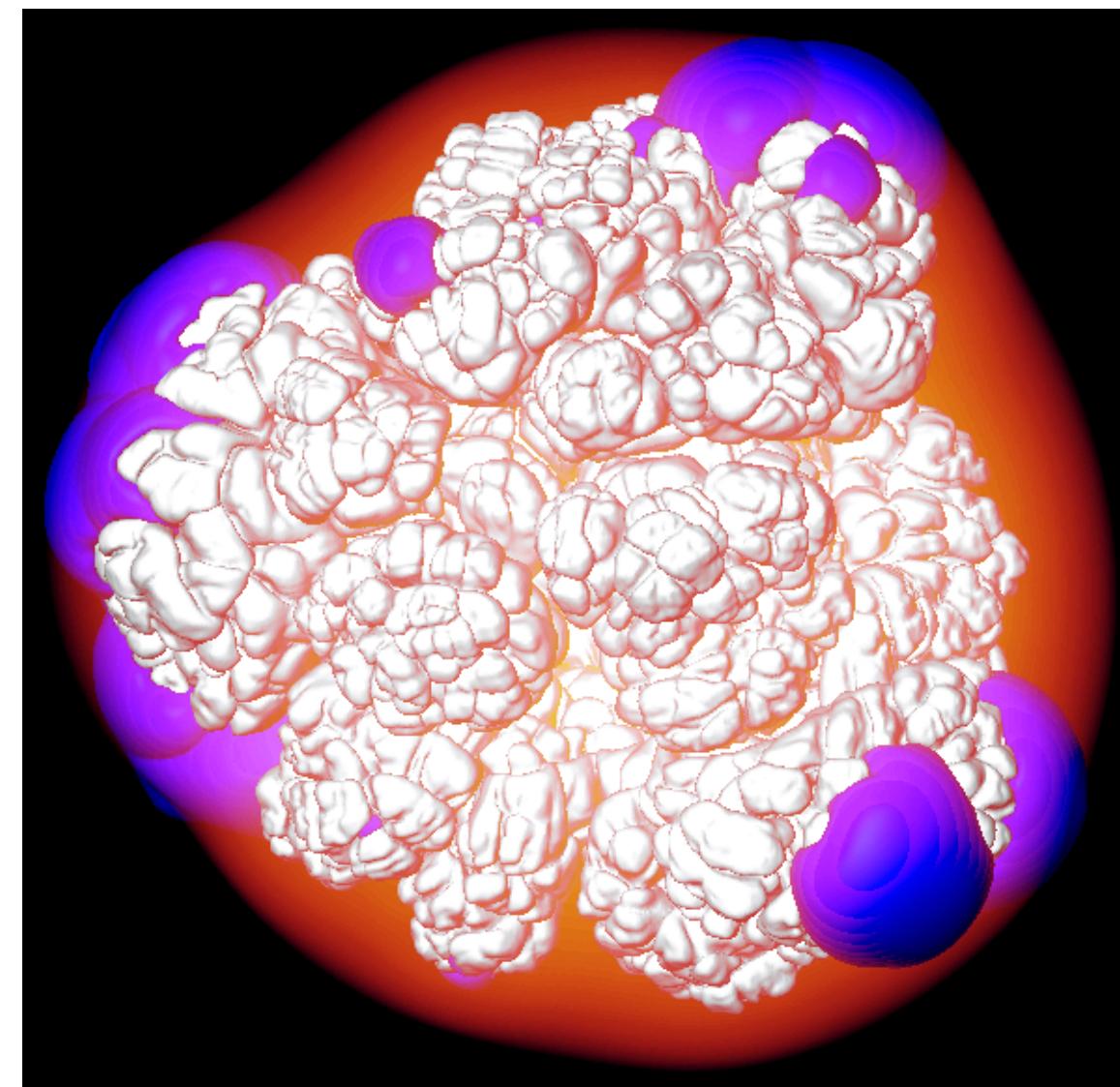
Minutes – Hours



1. Subjective
2. Time consuming
3. No uncertainties



time of explosion
temperatrue
etc.





TARDIS!

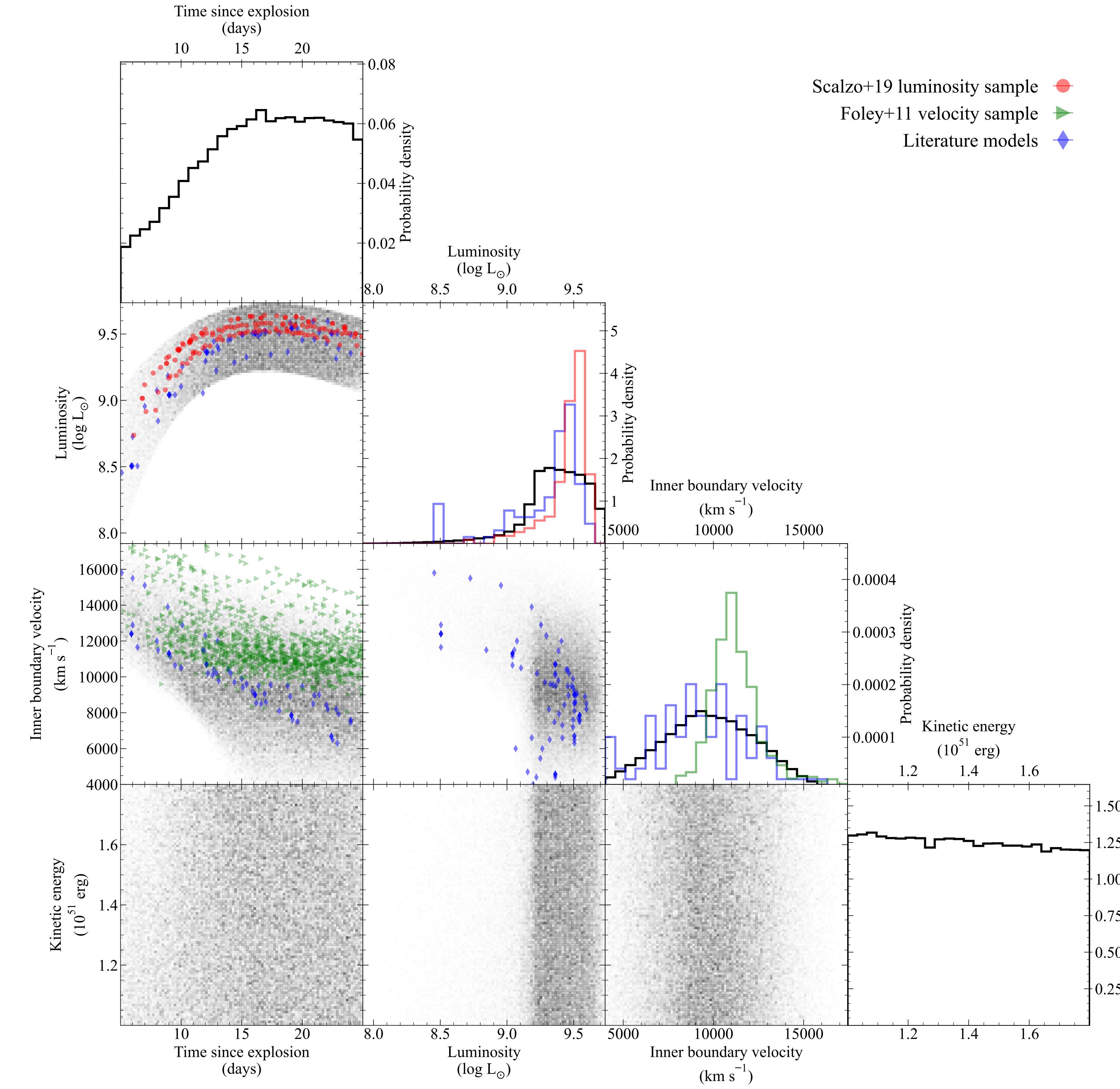
Exploring supernovae made easy

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csvy_model:
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montecarlo:
  iterations: 20
  last_no_of_packets: 1000000.0
  logger_buffer: 1
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  no_of_virtual_packets: 3
  nthreads: 1
  seed: 42865123
plasma:
  disable_electron_scattering: false
  disable_line_scattering: false
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  ionization: nebular
  line_interaction_type: macroatom
  link_t_rad_t_electron: 0.9
  radiative_rates_type: dilute-blackbody
  w_epsilon: 1.0e-10
spectrum:
  method: virtual
  num: 10000
  start: 3000.0 Angstrom
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luminosity_requested: 1.0400944943387371e+43 erg / s
time_explosion: 11.24579332468278 d
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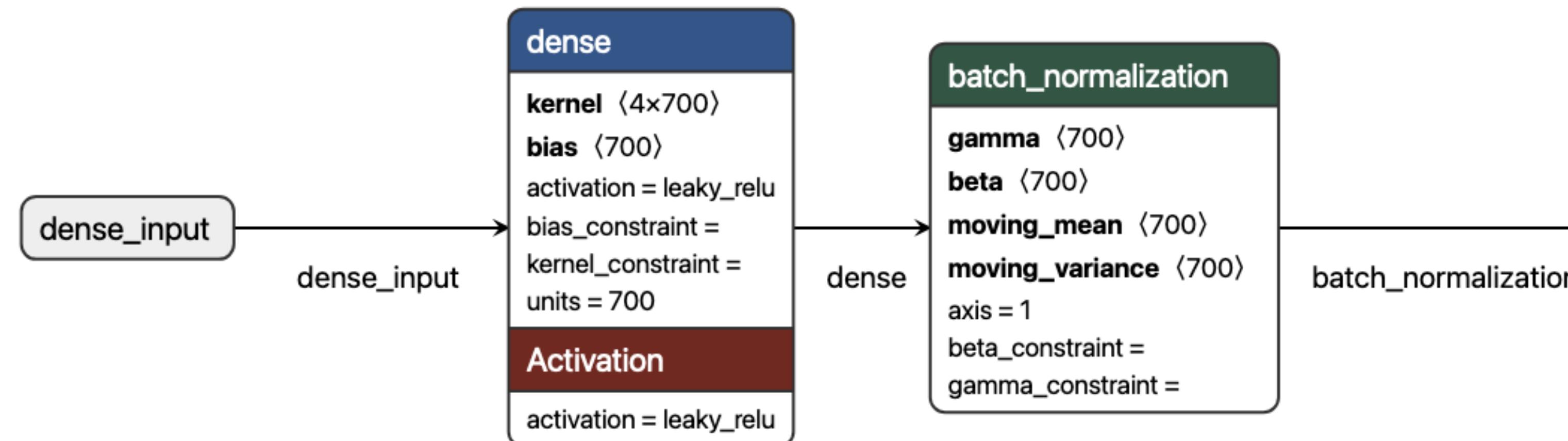
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,density,C,O,Ne,Na,Mg,Al,Si,Ar,Ca,Ti,Cr,Mn,Fe,Co,Ni,Ni56

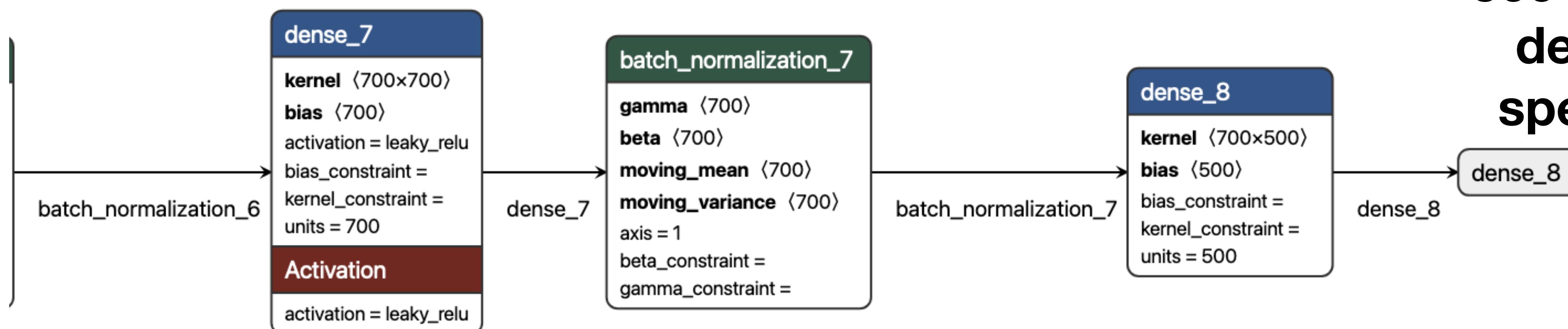
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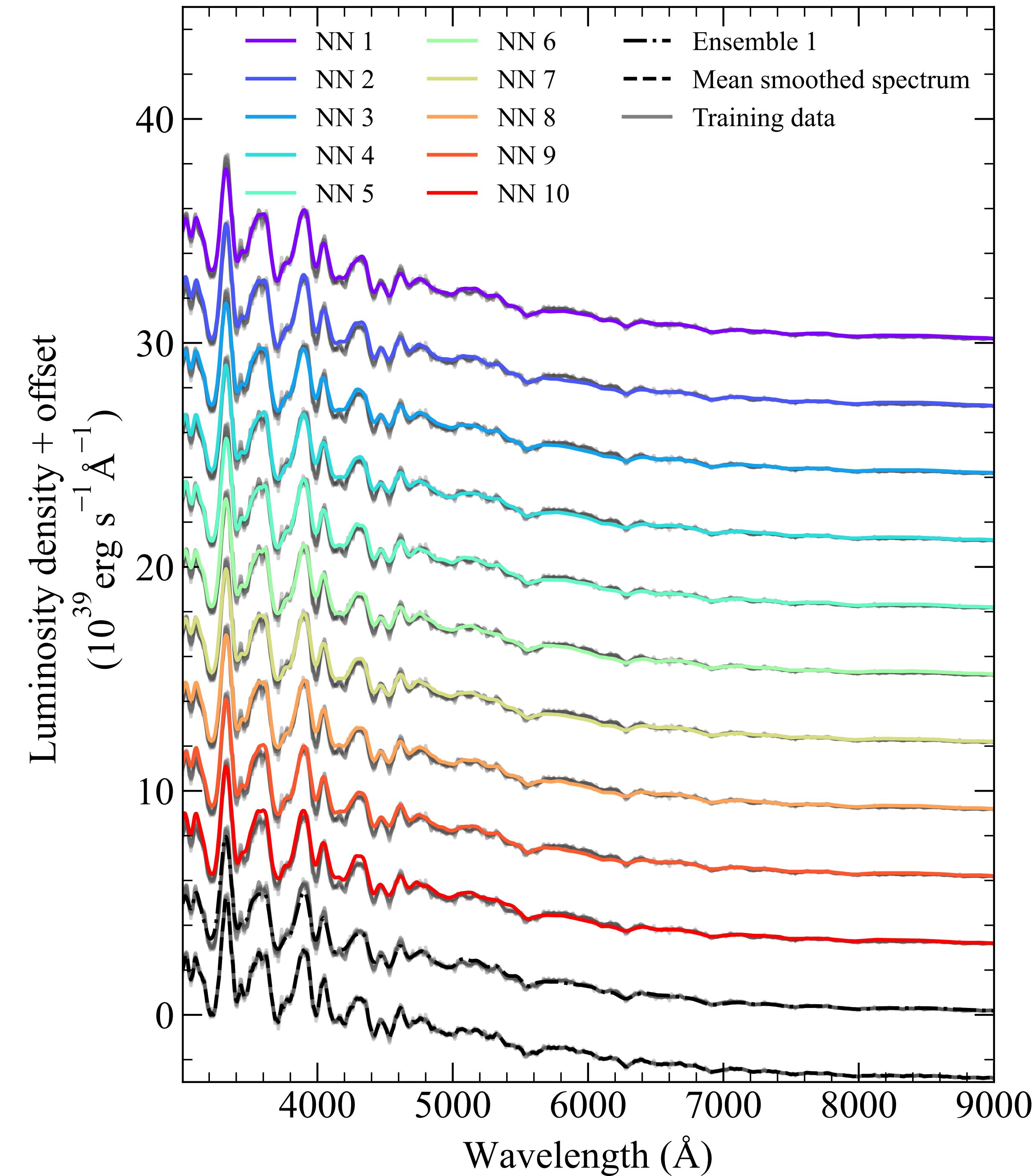
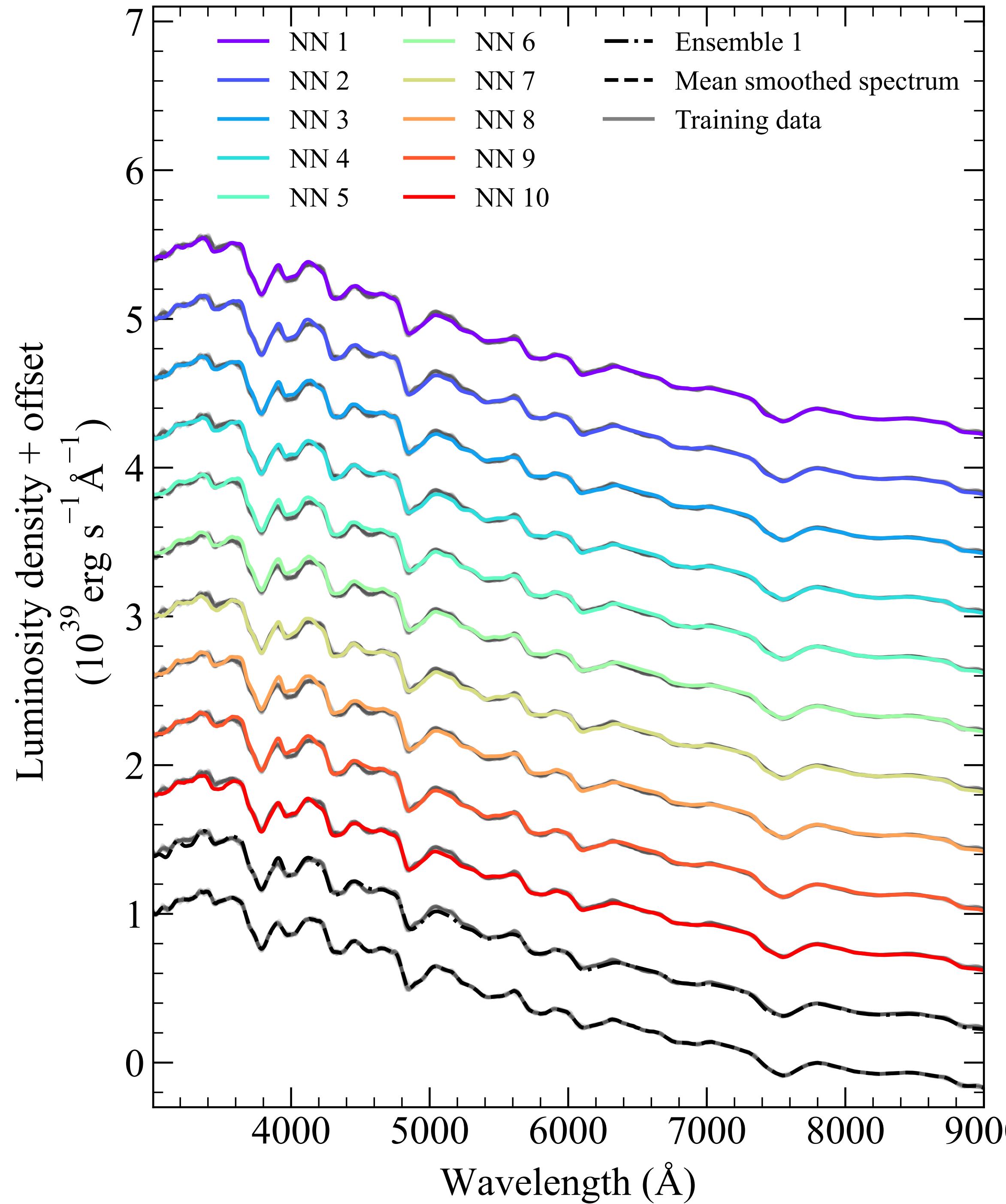


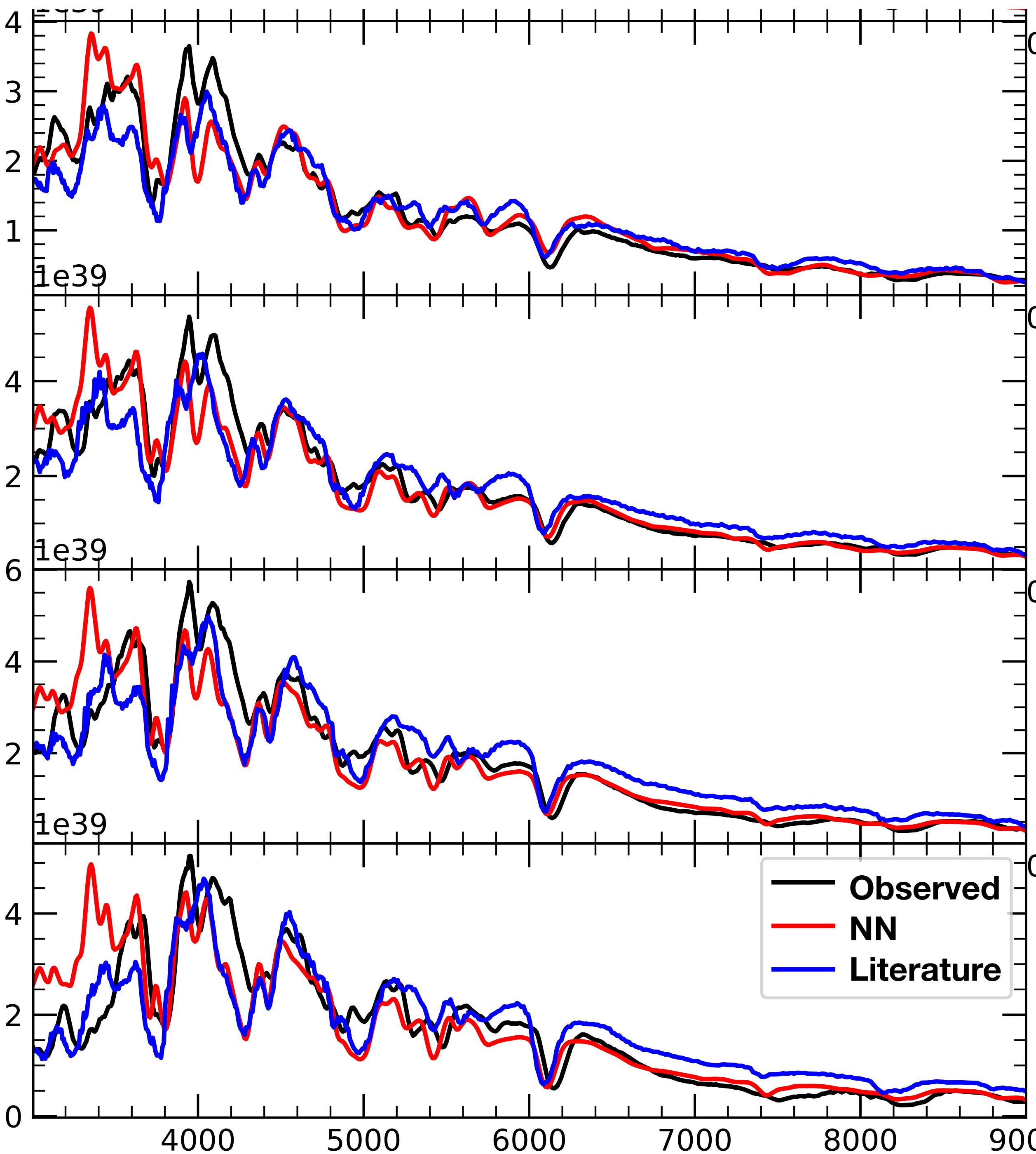
4 inputs defining model



500 outputs defining spectrum







>1.6 million
evaluations

=

>6 million
spectra

=

>100 years