Fall 2020 Progress Status Presentation

Status report: systematic research for light curves of supernovae

2020.10.09 Sei Saito (M2)

Astronomy

Research topic: supernova



https://www.astroarts.co.jp/news/2012/07/02kiss/index-j.shtml

Unclear stellar evolution Diversity of stellar evolution —> Diversity of supernova Supernova

-> Stellar evolution



Systematic research for light curve of supernova

- —> ~ 10 % of supernovae; too much Ni (energy source)
- —> New explosion mechanism (producing much Ni) ? Other energy source ?

-> Trying to produce too much Ni with hydro simulation

Plan of research in GPPU

M2	Now	Supernova diversity from obs data (light curve) Simulation for supernova w/ too much Ni
D1		Thesis about 1 Calculation of stellar evolution & radiation transfer
D2		—> Comparison with above data, Limit of Ni model Thesis about 1
D3		Calculation of model with other energy source for extraordinary supernova (not explained above) Thesis about 1

1 month in Chile (D1)

- Expert on supernova diversity, Joseph Anderson
- Expert on applying data science to supernovae,
 Francisco Foster
- Many telescope —> Much time for observation
- 1 month in Sweden, Stockholm university (D2)
 - Expert on supernova diversity, Francesco Taddia
 - Expert on supernova polarization, Mattia Bulla
- > 1 month for international conference, workshop or school
 - M1: Chile (1 w), Russia (1 w), Hawaii (1w), other (3d + 3d)
 - M2: America (1 w), Sendai (2 d), Hiroshima (1 w)