

MONDAY 3 October, 2016

WS conveners: A.M.Bykov, R.A.Chevalier, J.C.Raymond, F.-K. Thielemann, M.Falanga, R. von Steiger

Notice: All presentations are 35' slots including time for questions

09:00-09:45 Registration in ISSI Bern, Hallerstrasse 6, 1st floor

Session 1 Introduction

09:45-10:00 Introduction to the Workshop Conveners

Session 2 Type Ia SNe Chair:

10:00-10:35 Type Ia cosmology Mark Sullivan

10:35-11:05 *Coffee break*

11:05-11:40 What are Type Ia Supernovae? Bruno Leibundgut

11:40-12:15 Multiwavelength constraints on the origin of SNe Ia Peter Lundqvist

12:15-12:50 Simulating thermonuclear explosions: models for Type Ia supernovae and related astrophysical transients Friedrich Roepke

12:50-14:10 *Lunch*

Session 3

Type Ia SNe Chair:

14:10-14:45 Synthetic observables for thermonuclear explosion models: comparison of predictions from models with observed light curves, spectra and polarimetry Stuart Sim

14:45-15:20 The presupernova evolution of degenerate cores and white dwarfs near the Chandrasekhar mass K. Nomoto

15:20-15:55 Gamma-rays from Type Ia supernovae Jordi Isern

15:55-16:50 Coffee break and Discussion on Type Ia supernovae

17:00 *Welcome reception*

TUESDAY 4 October, 2016

Session 4 Core-Collapse SNe Chair:

9:00-9:35 New Perspectives on the Core-Collapse Supernova Mechanism Adam Burrows

9:35-10:10 Impact of rotation on core collapse supernova progenitors Georges Meynet

10:10-10:40 *Coffee break*

Chairman:

10:40-11:15 Observational Insights on the Internal Structure of Core-Collapse and Type Ia SNe Rob Fesen

11:15-11:50 SN 1987A: Ejecta and transition to remnant Claes Fransson

11:50-12:25 Supernova Remnant Shocks in the Ejecta John Raymond

12:25- 13:10 Turbulence in Core-collapse Supernovae and Their Progenitors Sean Couch

13:10-14:20 *Lunch*

Chair:

14:20-14:55 Shocking Results Concerning Exploding Stars Tony Piro

14:55-15:30 Dust formation in supernovae: new advances and unsolved problems Isabelle Cherchneff

15:30-16:05 Dust and molecular observations in SN 1987A Mikako Matsuura

16:05-16:30 *Coffee break*

Session 5 Dust formation and nucleosynthesis

16:30-17:05 The dust scenario in Type II supernovae Arkaprabha Sarangi

17:05-17:40 Dust formation and survival in supernovae Elisabetta Micelotta

WEDNESDAY 5 October, 2016

Session 6 *Nucleosynthesis, neutrinos, CRs*

Chair:

| | | |
|-------------|---|---------------------------|
| 09:00-09:35 | Nucleosynthesis in supernovae | Friedrich-Karl Thielemann |
| 09:35-10:10 | Parametrized CCSN models for nucleosynthesis calculations | Albino Perego |
| 10:10-10:45 | Neutrinos in and from core-collapse supernovae | Irene Tamborra |
| 10:45-11:20 | Cosmic-ray acceleration by SNRs | Jacco Vink |

11:20-11:50 Coffee break

Chair:

| | | |
|-------------|--|----------------|
| 11:50-12:25 | Particle acceleration in transrelativistic SN shocks | Donald Ellison |
| 12:25-13:00 | Supernovae in compact star clusters and starbursts: pevatrons | Andrei Bykov |
| 13:00-13:35 | High-energy emission from supernovae and implications of IceCube results | Kohta Murase |

13:35 –19:00 Lunch +free time ISSI facilities are available for group discussions

19:00 **Workshop dinner at the restaurant
Kornhauskeller, Bern**

Thursday 6 October, 2016

Session 7 CC and SL SNe

Chair:

| | | |
|-------------|--|--------------|
| 09:00-09:35 | Recent progress in 3D modeling of core-collapse supernovae | Thomas Janka |
|-------------|--|--------------|

| | | |
|-------------|---|-----------|
| 09:35-10:10 | ASAS-SN -- a Complete Survey of Bright Supernovae | Subo Dong |
|-------------|---|-----------|

| | | |
|-------------|--|----------------|
| 10:10-10:45 | Hydrogen poor superluminous supernovae | Elena Sorokina |
|-------------|--|----------------|

| | | |
|-------------|---------------------|--|
| 10:45-11:15 | <i>Coffee break</i> | |
|-------------|---------------------|--|

| | | |
|-------------|--|----------------|
| 11:15-11:50 | Type Ic superluminous supernovae and possible signatures of their progenitor binary companions | Takashi Moriya |
|-------------|--|----------------|

| | | |
|-------------|--|----------------|
| 11:50-12:25 | Supernovae exploding in dense environments | Poonam Chandra |
|-------------|--|----------------|

| | | |
|-------------|--|--------------|
| 12:25-12:50 | Observed diversity in supernovae with strong CSM interaction | Nathan Smith |
|-------------|--|--------------|

| | | |
|-------------|--------------|--|
| 12:50-14:00 | <i>Lunch</i> | |
|-------------|--------------|--|

Session 8

Chair:

| | | |
|-------------|------------------------------|-----------------|
| 14:00-14:35 | Pulsar Nebulae in Supernovae | Roger Chevalier |
|-------------|------------------------------|-----------------|

| | | |
|-------------|--|-------------------|
| 14:35-15:10 | What are "unusual" supernovae and what can we learn from them? | Dan Milisavljevic |
|-------------|--|-------------------|

| | | |
|-------------|--|--------------------|
| 15:10-15:45 | The Zoo of H-stripped core-collapse SNe: engines and unusual mass-loss histories | Raffaella Margutti |
|-------------|--|--------------------|

| | | |
|-------------|---------------------|--|
| 15:45-16:10 | <i>Coffee break</i> | |
|-------------|---------------------|--|

| | | |
|-------------|--|-------------|
| 16:10-16:45 | Peculiar Transients: the Fast and the Luminous | Maria Drout |
|-------------|--|-------------|

| | | |
|-------------|--|------------------|
| 16:45-17:25 | Book content introduction and discussions | Conveners |
|-------------|--|------------------|

FRIDAY 7 October, 2016

Session 9 **SNe and ISM**

Chair:

| | | |
|-------------|---|---------------------|
| 09:00-09:35 | Exploring for Signatures of Jet-Driven Explosions in Supernova Remnants | Laura Lopez |
| 09:35-10:10 | Cosmic rays and Supernovae: prospects for the Cherenkov Telescope Array | Alexandre Marcowith |
| 10:10-10:45 | Supernova solutions to positron problems | Peter von Ballmoos |

10:45-11:10 *Coffee break*

Session 10 **ISSI Book**

| | | |
|-------------|---|--------------------------|
| 11:10-12:30 | “Supernovae” Discussion book (authors Book plans, actions, schedule) | Conveners + participants |
|-------------|---|--------------------------|

End of Workshop