

ISSI Workshop on “Jets and Winds in Pulsar Wind Nebulae, Gamma-ray Bursts and Blazars: Physics of Extreme Energy Release”

16-20 November 2015

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MONDAY 16 November, 2015

WS conveners: A.Bykov, J.Arons, E.Amato, M.Falanga, M.Lemoine, L.Stella

Notice: All presentations are 45 or 30' slots including time for questions

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

Session 1 Introduction

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

Session 2 Pulsar Wind Nebulae Chairman: A.Bykov

10:00-10:30 Pulsar wind nebulae observations I: from radio to X-rays Stephen Reynolds

10:30-11:00 *Coffee break*

11:00-11:30 Pulsar wind nebulae observations II: X-rays George Pavlov

11:30-12:00 HE/VHE gamma-ray emission from Pulsar Wind Nebulae Matthieu Renaud

12:00-12:30 3D MHD- and high energy particle transport models of PWN Oliver Porth

12:30-13:00 Particle acceleration in pulsar magnetospheres Benoit Cerutti

13:00-14:30 *Lunch*

Session 3

14:30-15:15 Main elements of the physics of relativistic shocks and their astrophysical consequences Guy Pelletier

15:15-15:45 Colliding winds in gamma-ray binaries Astrid Lamberts

15:45-17:00 Discussion: PWNe

17:00 *Welcome reception*

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TUESDAY 17 November, 2015

Session 4 *Gamma-ray bursts*

Chairman: M.Lemoine

9:00-9:45	Gamma Ray Bursts and their Multi-messenger Signals	Peter Meszaros
9:45-10:30	Multi-wavelength Observations of GRBs and Fast Transients	Richard Willingale

10:30-11:00 *Coffee break*

11:00-11:30	Jet propagation in GRBs, theory, numerical results and implications to observations	Tsvi Piran
11:30-12:00	Dissipation and emission mechanism of GRBs	Andrei Beloborodov
12:00-12:30	GRB prompt emission: jet composition and radiation mechanism	Bing Zhang /Peter Meszaros

12:30-14:00 *Lunch*

14:00-14:30	GRB emission sites during the prompt and afterglow phase	Frédéric Daigne
14:30-15:00	Radiation Processes in GRBs	Katsuaki Asano
15:00-15:30	Radiation Processes in relativistic outflows	Martin Pohl

15:30-16:00 *Coffee break*

Session 5 *Jets and Winds in GRBs*

16:00-16:30	Relativistic Outflows in GRBs	Andrew MacFadyen
16:30-17:00	Three-dimensional simulations of magnetized jets in core-collapse gamma-ray bursts	Alexander Tchekhovskoy
17:00-18:00	Discussion	

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WEDNESDAY 18 November, 2015

Session 6 *Jets and Winds in the Crab Nebula*

Chairman: E.Amato

09:00-09:30	The variable Crab Nebula: Particle "Super-Acceleration" and Challenges	Marco Tavani
09:30-10:00	A long term view on the variability of the Crab nebula	Rolf Buehler
10:00-10:30	The inner knot of the Crab Nebula	Serguei Komissarov

10:30-11:00 Coffee break

Chairman:

11:00-11:30	Mechanisms of Particle Acceleration and Radiation in the Crab Nebula	Yajie Yuan
11:30-12:00	Searching across wavelengths for the origins of the bright gamma-ray flares from the Crab pulsar wind nebula	Alex Rudy
12:00-12:30	Particle acceleration and non-thermal emission in the Crab Nebula from relativistic MHD simulations	Barbara Olmi
12:30-13:30	Discussion	

12:30-14:00 Lunch

14:00-19:00	Free time to visit the attractions of Bern Also: All ISSI facilities are available for group discussions	
19:00	Workshop dinner at the restaurant Kornhauskeller, Bern	

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THURSDAY 19 November, 2015

Session 7 AGN

Chairman:

09:00-09:30	High Energy emission from Blazars: probing particle acceleration and magnetic fields	Fabrizio Tavecchio
09:30-10:00	Radio emission from relativistic jets: lessons from nearby AGNs and microquasars	Gustavo E. Romero
10:00-10:30	Direct signatures of evolving particle acceleration in X-ray binaries and AGN	Sera Markoff

10:30-11:00 *Coffee break*

11:00-11:30	Multiwavelength Polarization in Blazars as Diagnostics for Jet Physics	Markus Böttcher
11:30-12:15	Discussion	

12:15-13:45 *Lunch*

Session 8 Magnetars

13:45-14:15	Outflows from magnetars	Sandro Mereghetti
14:15-14:45	Magnetar Formation	Rosalba Perna
14:45-15:30	Magnetoluminescence	Roger Blandford

15:30-16:00 *Coffee break*

16:00-17:30	Book content introduction and discussions	Conveners
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FRIDAY 20 November, 2015

Session 9 Reconnection / Particle Acceleration

Chairman:

09:00-09:30	Particle acceleration in turbulent magnetic reconnection	Masahiro Hoshino
09:30-10:00	Particle Acceleration and Radiation in Magnetically-Dominated Outflows	Lorenzo Sironi
10:00-10:30	IceCube neutrinos and the origin of cosmic-rays	Eli Waxman
10:30-11:00	<i>Coffee break</i>	
11:00-11:30	Discussion	

Session 10 ISSI Book

11:30-12:30	“Jets and Winds in Pulsar Wind Nebulae, Gamma-ray Bursts and Blazars: Physics of Extreme Energy Release” Discussion book (authors Book plans, actions, schedule)	A.Bykov/M.Falanga
End of Workshop		