

# Jets and Winds



INTERNATIONAL  
SPACE  
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INSTITUTE

# in Pulsar Wind Nebulae and Gamma-Ray Bursts and Blazars

## Workshop

## 16-20 November 2015

### Workshop Conveners

Andrei Bykov, Ioffe, Russia and ISSI, Switzerland  
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The Workshop is devoted to an in-depth discussion of complex and multi-scale fundamental studies of astrophysical objects with extreme energy release via multi-wavelength observations and modeling. The compact stellar remnants of supernova fast rotating black holes and neutron stars – are able to give rise, with their ultra-relativistic jets and winds, the rapid release of a large amount of energy, such as observed in gamma-ray bursts (GRBs) and soft gamma-ray repeaters, as well as long-lasting, quasi-steady, high energy sources such as pulsar wind nebulae (PWNe) and blazars.

Complex studies of these objects allow to address a number of fundamental problems, such as the physical mechanisms and efficiencies of conversion of the rotation and magnetic energies of the central engine into the observed electromagnetic radiations and neutrinos, launching of relativistic outflows, acceleration of ultra-relativistic particles. Soft gamma-ray repeaters are related to magnetars – objects with the highest ever magnetic fields. Extreme physical conditions that are present in these objects are unreachable in the terrestrial laboratories and therefore these sources provide a unique opportunity to test physical laws under extreme conditions.