National Astrophysics and Space Physics Programme

High Energy Astrophysics – Part II

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Course Contents: This second part of the course will cover the fundamentals of $\gamma\gamma$ absorption and pair production, followed by applications of the foundations of high-energy processes, covered in the first part of this course, to specific object classes, including supernovae, gamma-ray bursts, neutron stars, pulsars, accretion disks, and active galactic nuclei.

Texts:

- (Lo) M. S. Longair: "High Energy Astrophysics", Cambridge University Press
- (Bo) M. Böttcher, D. E. Harris, & H. Krawczynski: "Relativistic Jets from Active Galactic Nuclei", Wiley-VCH

Assignments: Two homework assignments are given, on April 30 and May 5. Due dates for the solutions are May 5 and May 8, respectively. The second homework solution may be submitted electronically (since I won't be in Cape Town on May 8).

Preliminary Schedule

Date	Content	Book reference	Assignments
Tu., Apr. 29, 14:00 – 16:00	$\gamma\gamma$ absorption and pair production	Lo 9.8-9.9, Bo 3.2.3	
We., Apr. 30, 14:00 – 16:00	Supernovae, Supernova Remnants, Gamma-Ray Bursts	Lo 13.1	A.1 handed out
Fr., May 2, 14:00 – 16:00	White Dwarfs, Neutron Stars, Pulsars, Pulsar-Wind Nebulae	Lo 13.2-13.9	
Mo., May 5, 14:00 - 16:00	Black holes, accretion disks; X-ray/gamma-ray binaries	Lo 14	A.1 solutions due; A.2 handed out (due on May 8)
Tu., May 6 14:00 – 16:00	Active Galactic Nuclei	Lo 18, 20-21; Bo 8	