

## **PHYS 561 High Energy Astrophysics**

### **Lectures:**

Monday 9:40 - 12:30

Zoom: <https://sabanciuniv.zoom.us/j/93824256273?pwd=TGNLWHpRNGp1MGxTR3Y5dWNXK1QzZz09>

### **Reference books:**

High Energy Astrophysics by Longair

Theoretical Astrophysics Vol.1 by Padmanabhan

Introduction to High Energy Astrophysics by Rosswog & Bruggen

### **Topics:**

Fundamentals of Radiative Transfer

Radiation of accelerated charged particles, Bremsstrahlung

Dynamics of charged particles in magnetic fields

Synchrotron radiation

Interactions of high energy photons (photoelectric absorption, Thompson & Compton scattering, Inverse Compton scattering, Cherenkov radiation, electron – positron pair production)

Particle (Fermi) acceleration

### **Term Project:**

Researching about a topic, writing a report and presenting it to the class

### **Research project topics:**

\* *GWs - GRB 170817 - Kilonovae (Ceyda)*

\* *Dark matter (Burak)*

Dark Energy

AGNs

Clusters of galaxies

Supernova remnants

Cosmic rays, Cherenkov radiation

..... (you propose)

**Grading:** Homeworks (60%), Term report (40%, presentation grade is peer graded)