

ASTRONOMY 300B: Review for Exam Number 3

The third midterm exam will be in class on Friday, April 24. The exam will cover

- Rybicki & Lightman Chapters 4.2-4.9, 5, and 6.

- The class notes

Special Relativity, Parts 3-5

The Cosmic Microwave Background

Bremsstrahlung

X-ray Emission from Ellipticals and Clusters of Galaxies

Cyclotron and Synchrotron Radiation

- Homework assignments 8-10.

The format is that you are allowed to bring 3 page of notes into the exam – presumably the two you brought to the last exam, and a new one. Although I am not testing you on the material covered in Exams 1&2, I will use some of the ideas, e.g. optical depth, or the Planck function. I will give you a copy of the physical constants you need. Please also bring a calculator.

The main topics we covered since the last exam are:

Special Relativity: 4-vector and Tensor notation, especially for E and B fields

Relativistic Effects and implications for radiation: beaming, superluminal expansion, the CMB dipole

The CMB

Thermal Bremsstrahlung

X-ray emission from elliptical galaxies and clusters of galaxies

Cyclotron and Synchrotron radiation