Physics 560B
Methods of Mathematical Physics II
Special Topic in Plasma and Astrophysics
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We apply applications of mathematical methods to plasma and astrophysics. These topics can be approached from many different directions, each one emphasizing some aspects of the field more than the others. Although we review the fundamental physics needed for the course, in some cases the treatment is brief, where the material has already been treated in different areas of Physics.

<u>Prerequisite</u>: Math 370A, B or Physics 560A

<u>Textbook</u>

1) Bradley W. Carroll and Dale A. Ostlie, *"An Introduction to Modern Astrophysics"* http://astrophysics.weber.edu
2) Class handout: My lecture notes in Astrophysics.
3) My lecture notes in Plasma Physics.

<u>Marking</u>
- Midterm 1   25%
- Midterm 2   25%
- Final   30%
- Homework   20%

Rough Outline

<u>Plasma Physics</u>
- Nature of plasma
- Charged particles in a uniform or non-uniform electric and magnetic field
- Waves in a plasma
- Magnetic confinement
- Plasma instability
- Controlled thermonuclear fusion

<u>Astrophysics</u>
- Classical mechanics
- Binary systems
- The interior of sun and stairs
- Stellar pulsation
- Close Binary Star System
- Physics processes in the Solar System
- Cosmology