

Plasma Physics (Physics 218A)

Mon Wed 2:00 – 3:20

Office Hours: Tu 11:00 – 12:00 or by appointment

Topics:

(218A) Basic physics of plasma without magnetic field

Main features of plasmas. Classifications of different plasmas.

Coulomb collisions in plasma.

Electron and ion plasma waves (fluid and Vlasov descriptions).

Landau damping, echoes, trapping of resonant particles.

Beam-plasma instability.

Quasi-linear theory.

Recommended Texts: No single book will be followed. The following books will be useful:

- Krall and Trivelpiece, “Principle of Plasma Physics”
- Chen, “Plasma Physics and Controlled Fusion”
- Akhiezer, Akhiezer, Polovin, Sitenko and Stepanov, “Plasma Electrodynamics”
- Ichimaru, “Basic Principles of Plasma Physics A Statistical Approach”

Lecture notes will be placed on the web side.

Homework: Due on Wednesday
week after assigned

Final Exam: Select topics before October 25. Papers on research topics due November 29 (double space 10 pages maximum); 20 min presentations.

Course grade: Homework + Presentation

$$50\% + 50\% = 100\%$$