

29:225 Team-Lead Class Discussion Assignment

Your must choose your partner, the paper, and the date for your discussion by Thursday, October 11, 2012. Team-lead class discussions will run from Tuesday, October 16, 2012 through Thursday, November 15, 2012.

The intent of this assignment is to give each of you practice in leading a discussion of either a recent paper in the literature or a classic paper from the literature.

1. The class discussions will be lead by pairs of students. Each of you will need to find a partner in the class for this assignment. Please group yourselves in pairs.
2. Each team of two students will choose a paper to discuss and will lead the class discussion.
3. Please try to select papers of a reasonable length, typically between 4 and 10 pages in standard journal typeface. If you are very interested in a longer paper and can select certain sections to skip to get down to 10 pages, that will be acceptable.
4. Choose papers that present a new scientific result, rather than review-type papers that summarize the results of previous work. Such reviews, although valuable for learning about recent progress on a particular topic, usually do not contain the level of detail necessary for a proper class discussion.
5. When preparing for the class, use the *Hints for Effective Reading of the Literature* handout from class to help prepare notes for discussion. In particular, compile notes on your answers to #1 on that handout (Questions to consider while reading). Examples of my own notes for leading class discussion for Landau's 1946 paper and Parker's 1958 paper are available on the class website.
6. When leading discussion, do your best to ask questions of the class and give them time to answer before providing guidance.

Dates for Team-led Discussions:

During our class meeting on Thursday, October 11, we will choose the dates for each team-led presentation.

1. Tuesday, October 16
2. Thursday, October 18
3. Tuesday, October 23
4. Thursday, October 25
5. Tuesday, November 6
6. Thursday, November 8
7. Tuesday, November 13
8. Thursday, November 15

Note that there will be no class meetings during the week of the APS Division of Plasma Physics meeting, October 29–November 2.

Suggested potential classic papers in the literature:

Some of these are very long, but they are all important contributions. [Alfvén, 1942, Bondi, 1952, Braginskii, 1965, Chapman and Ferraro, 1930, D'Angelo, 1990, Goertz and Boswell, 1979, Holzer and Axford, 1970, Knight, 1973, Langmuir, 1913, McIlwain, 1960, Mott-Smith and Langmuir, 1926, Parker, 1966, Reeves et al., 2003, Rosseland, 1924, Scudder, 1992, Sridhar and Goldreich, 1994, Weber and Davis, 1967, Wu and Lee, 1979]

References

- [Alfvén, 1942] Alfvén, H. (1942). Existence of Electromagnetic-Hydrodynamic Waves. *Nature*, 150:405–406.
- [Bondi, 1952] Bondi, H. (1952). On spherically symmetrical accretion. *Mon. Not. Roy. Astron. Soc.*, 112:195.
- [Braginskii, 1965] Braginskii, S. I. (1965). Transport Processes in a Plasma. *Rev. Plasma Phys.*, 1:205–+.
- [Chapman and Ferraro, 1930] Chapman, S. and Ferraro, V. C. A. (1930). A New Theory of Magnetic Storms. *Nature*, 126:129–130.
- [D’Angelo, 1990] D’Angelo, N. (1990). Low-frequency electrostatic waves in dusty plasmas. *Planet. Space Sci.*, 38:1143–1146.
- [Goertz and Boswell, 1979] Goertz, C. K. and Boswell, R. W. (1979). Magnetosphere-ionosphere coupling. *J. Geophys. Res.*, 84:7239–7246.
- [Holzer and Axford, 1970] Holzer, T. E. and Axford, W. I. (1970). The Theory of Stellar Winds and Related Flows. *Ann. Rev. Astron. Astrophys.*, 8:31.
- [Knight, 1973] Knight, S. (1973). Parallel electric fields. *Planet. Space Sci.*, 21:741–750.
- [Langmuir, 1913] Langmuir, I. (1913). The Effect of Space Charge and Residual Gases on Thermionic Currents in High Vacuum. *Physical Review*, 2:450–486.
- [McIlwain, 1960] McIlwain, C. E. (1960). Direct Measurement of Particles Producing Visible Auroras. *J. Geophys. Res.*, 65:2727.
- [Mott-Smith and Langmuir, 1926] Mott-Smith, H. M. and Langmuir, I. (1926). The Theory of Collectors in Gaseous Discharges. *Physical Review*, 28:727–763.
- [Parker, 1966] Parker, E. N. (1966). The Dynamical State of the Interstellar Gas and Field. *Astrophys. J.*, 145:811.
- [Reeves et al., 2003] Reeves, G. D., McAdams, K. L., Friedel, R. H. W., and O’Brien, T. P. (2003). Acceleration and loss of relativistic electrons during geomagnetic storms. *Geophys. Res. Lett.*, 30(10):100000–1.
- [Rosseland, 1924] Rosseland, S. (1924). Electrical state of a star. *Mon. Not. Roy. Astron. Soc.*, 84:720–728.
- [Scudder, 1992] Scudder, J. D. (1992). On the causes of temperature change in inhomogeneous low-density astrophysical plasmas. *Astrophys. J.*, 398:299–318.
- [Sridhar and Goldreich, 1994] Sridhar, S. and Goldreich, P. (1994). Toward a theory of interstellar turbulence. 1: Weak Alfvénic turbulence. *Astrophys. J.*, 432:612–621.
- [Weber and Davis, 1967] Weber, E. J. and Davis, Jr., L. (1967). The Angular Momentum of the Solar Wind. *Astrophys. J.*, 148:217–227.
- [Wu and Lee, 1979] Wu, C. S. and Lee, L. C. (1979). A theory of the terrestrial kilometric radiation. *Astrophys. J.*, 230:621–626.