

# **6.977 Ultrafast Optics 2005**

## **Term Paper Assignment**

We will have a term paper instead of a final examination. The purpose of this paper is to give you an opportunity to do independent reading and study in order to apply the theoretical concepts that you have learned in class.

Please submit a proposal for the term paper on April 12<sup>th</sup> (Tuesday) in class.

The proposal should contain a title, a half page abstract and 2-3 references on which the term paper will be based. The topic of the paper should be related to the general topic of the class. The paper can have several formats. It can be a summary and review of a few selected journal articles on a particular theme of interest, or it can be related to a problem you are addressing in your research.

The constraints are that the topic of the paper should be understandable to your peers and that it should be written in clear, self-contained, and understandable way. The paper must have an appropriate introduction that presents the topic in a clear scientific context. In addition, the paper must use in some way the information that we have studied in class.

The papers do not have to contain original research.

The paper should be submitted electronically in Microsoft Word or PDF format. The file size should not be larger than 1 MB. The paper should be e-mailed with copies. The final term paper should be 10 to 20 pages in length and is due on May 16<sup>th</sup> (Monday) 12:00pm.

Topic examples:

1. Inverse Scattering Theory and Soliton Collisions
2. Kerr-Lens Modelocking
3. Additive Pulse Modelocking
4. Carrier-Wave Rabi flopping/Beyond the Rotating Wave Approximation
5. Phase Stabilized High Energy Laser Pulses
6. Coherent Addition of Laser Pulses
7. Stretcher-Compressor Design in Chirped Pulse Amplifiers
8. Parametric Chirped Pulse Amplification
9. High-Harmonic Generation
10. Microfabrication with Femtosecond Laser Pulses

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