PHY 711 Classical Mechanics and Mathematical Methods 10-10:50 AM MWF Olin 103

Plan for Lecture 19:

Continue reading Chapter 7

- 1. Wave equation
- 2. Sturm-Liouville equations
- 3. Green's function methods

Course schedule

(Preliminary schedule -- subject to frequent adjustment.)

| | Date | F&W Reading | Topic | Assignment |
|----|-----------------|-------------|--|----------------|
| 1 | Wed, 8/29/2012 | Chap. 1 | Review of basic principles;Scattering theory | <u>#1</u> |
| 2 | Fri, 8/31/2012 | Chap. 1 | Scattering theory continued | <u>#2</u> |
| 3 | Mon, 9/03/2012 | Chap. 1 | Scattering theory continued | <u>#3</u> |
| 4 | Wed, 9/05/2012 | Chap. 1 & 2 | Scattering theory/Accelerated coordinate frame | <u>#4</u> |
| 5 | Fri, 9/07/2012 | Chap. 2 | Accelerated coordinate frame | <u>#5</u> |
| 6 | Mon, 9/10/2012 | Chap. 3 | Calculus of Variation | <u>#6</u> |
| 7 | Wed, 9/12/2012 | Chap. 3 | Calculus of Variation continued | |
| 8 | Fri, 9/14/2012 | Chap. 3 | Lagrangian | <u>#7</u> |
| 9 | Mon, 9/17/2012 | Chap. 3 & 6 | Lagrangian | <u>#8</u> |
| 10 | Wed, 9/19/2012 | Chap. 3 & 6 | Lagrangian | <u>#9</u> |
| 11 | Fri, 9/21/2012 | Chap. 3 & 6 | Lagrangian | <u>#10</u> |
| 12 | Mon, 9/24/2012 | Chap. 3 & 6 | Lagrangian and Hamiltonian | <u>#11</u> |
| 13 | Wed, 9/26/2012 | Chap. 6 | Lagrangian and Hamiltonian | <u>#12</u> |
| 14 | Fri, 9/28/2012 | Chap. 6 | Lagrangian and Hamiltonian | <u>#13</u> |
| 15 | Mon, 10/01/2012 | Chap. 4 | Small oscillations | <u>#14</u> |
| 16 | Wed, 10/03/2012 | Chap. 4 | Small oscillations | <u>#15</u> |
| 17 | Fri, 10/05/2012 | Chap. 4 | Small oscillations | |
| 18 | Mon, 10/08/2012 | Chap. 7 | Wave equation | Take Home Exam |
| 19 | Wed, 10/10/2012 | Chap. 7 | Wave equation | Take Home Exam |
| 20 | Fri, 10/12/2012 | Chap. 7 | Wave equation | Take Home Exam |
| 21 | Mon, 10/15/2012 | Chap. 7 | Wave equation | Exam due |



Department of Physics

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News



Workshop for Middle School
Teachers Organized by Prof. Cho is
Featured in Mashable, Huffington
Post, and Fox 8 News



Article in WS Journal on Tech Expo Features Beet-Root Juice



Article by Lacra Nequreanu
of the Salsbury Group Selected
for Inaugural Contribution to
Proteopedia from JBSD



Prof. Thonhauser receives NSF CAREER award



Carroll Group's Power Felt Featured on CNN International

Events

Wed Oct 10, 2012 <u>Prof Jean-Luc Brédas</u> Georgia Tech

2:15 PM in Olin 101 Refreshments at 3:15 Following in Lobby

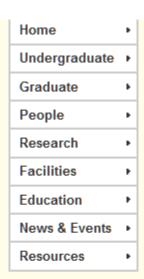
Wed Oct 17, 2012
Prof Samuel Danagoullan
NC A&T
4:15 PM in Olin 161

Refreshments at 3:45 in Lobby

Oct 29-30, 2012
Stuttgart NanoDays
NanoCarbon Technology
Conference
Wake Forest Biotech Place

Profiles in Physics





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interdisciplinary study and
close student-faculty
collaboration.

WFU Joint Physics and Chemistry Colloquium

TITLE: Electronic and Optical Processes in Organic Electronic

Devices: The Case of Charge Transport

SPEAKER: Professor Jean-Luc Brédas,

Center for Organic Photonics and Electronics and School of Chemistry and Biochemistry, Georgia Institute of Technology, Atlanta, GA

TIME: Wednesday October 10, 2012 at 2:15 **

PLACE: Room 101 Olin Physical Laboratory

** Note early starting time

Refreshments will be served at 3:15 PM in the Olin Lounge following the colloquium. All interested persons are cordially invited to attend.

ABSTRACT

In this presentation, we will first give an overview of the recent progress made in the applications of organic electronic devices, in particular in the case of organic light-emitting diodes, field-effect transistors, and solar cells. Taking the latter as example, we will then describe the electronic and optical processes that need to be optimized to ensure efficient device operation: (i) photon absorption and exciton formation; (ii) exciton dissociation and charge separation; (iii) charge transport towards the electrodes; and (iv) charge collection at the electrodes. The last part of the talk will focus on point (iii); we will illustrate how quantum-chemical approaches can be used to derive at the molecular level the parameters (electronic couplings and electron-vibration couplings) that impact the charge-transport properties of organic molecular semiconductors.

The wave equation and its solutions

$$\frac{\partial^2 \mu}{\partial t^2} - c^2 \frac{\partial^2 \mu}{\partial x^2} = 0$$

Change partitial differential equation to ordinary differential equation :

$$\mu(x,t) = e^{-i\omega t} \rho(x)$$