PHY 711 Classical Mechanics and Mathematical Methods
10-10:50 AM MWF Olin 103
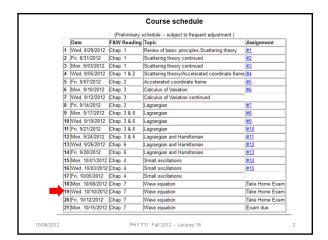
Plan for Lecture 19:

Continue reading Chapter 7

1. **Wave equation**

2. **Sturm-Liouville equations**

3. **Green's function methods**

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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	#1
2	Fri, 8/31/2012	Chap. 1	Scattering theory continued	#2
3	Mon, 9/03/2012	Chap. 1	Scattering theory continued	#3
4	Wed, 9/05/2012	Chap. 1 & 2	Scattering theory//Accelerated coordinate frame	#4
5	Fri, 9/07/2012	Chap. 2	Accelerated coordinate frame	#5
6	Mon, 9/10/2012	Chap. 3	Calculus of Variation	#6
7	Wed, 9/12/2012	Chap. 3	Calculus of Variation continued	
8	Fri, 9/14/2012	Chap. 3	Lagrangian	#7
9	Mon, 9/17/2012	Chap. 3 & 6	Lagrangian	#8
10	Wed, 9/19/2012	Chap. 3 & 6	Lagrangian	#9
11	Fri, 9/21/2012	Chap. 3 & 6	Lagrangian	#10
12	Mon, 9/24/2012	Chap. 3 & 6	Lagrangian and Hamiltonian	#11
13	Wed, 9/26/2012	Chap. 6	Lagrangian and Hamiltonian	#12
14	Fri, 9/28/2012	Chap. 6	Lagrangian and Hamiltonian	#13
15	Mon, 10/01/2012	Chap. 4	Small oscillations	#14
16	Wed, 10/03/2012	Chap. 4	Small oscillations	#15
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

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Slide 1

WFU Joint Physics and Chemistry Colloquium

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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 Technolgy, 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.

Wake Forest Physics… Nationally recognized for teaching excellence; internationally respected for research advances; a focused emphasis on interdisciplinary study and close student/faculty collaboration.

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.

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Slide 2

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:

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

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