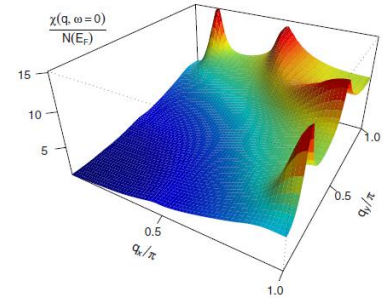


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# Fall 2020: PHY7097

## Advanced Topics in Condensed Matter Physcs (On-line Course)

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All materials for this class will be posted at [UF e-learning](#) . Enter with your Gatorlink login and password.

### Zoom Meeting Days & Times:

Tuesday & Thursday

Period 3+ (9:35 a.m. - 10:50 a.m.)

### Instructors:

**Peter Hirschfeld**

e-mail: [pjh@phys.ufl.edu](mailto:pjh@phys.ufl.edu)

**Dmitri Maslov** (course coordinator)

e-mail: [maslov@phys.ufl.edu](mailto:maslov@phys.ufl.edu)

**Khandker Muttalib**

email: <mailto:muttalib@phys.ufl.edu>

**Yuxuan Wang**

email: <mailto:yuxuan.wang@ufl.edu>

### Office hours:

Via Zoom by appointment with an instructor

## Pre-requisites

Solid State Physics I (PHZ6426) and Solid State Physics II (PHZ7427) are desirable but not required.

## Objectives

The objective of this course is to provide students with deeper understanding and recent developments in modern Condensed Matter Physics. This edition of the course focuses on following topics:

- A. Transport in Correlated Electron Systems (*Maslov*)
- B. Unconventional superconductivity II (*Hirschfeld*)
- C. Geometric Frustration in Ising Magnets (*Muttalib*)
- D. Introduction to Bosonization (*Wang*)

## Coursework

As determined by individual teachers. No final exam.

## Texts

No main text is assigned. Lectures notes will be provided.

Supplementary texts:

For A: L. P. Pitaevskii and E. M. Lifshitz, *Physical Kinetics, Landau Course of Theoretical Physics, v. X*, Butterworth-Heinemann (1981).

For B: M. Tinkham, *Superconductivity*, 2nd edition, Dover (1996).

For C: R.J. Baxter, *Exactly Solved Models in Statistical Mechanics*, Academic Press, London (1982); P.M. Chaikin and T.C. Lubensky, *Principles of Condensed Matter Physics*, Cambridge University Press (1998).

For D: T. Giamarchi, *Quantum Theory in One Dimension*, Oxford (2004).

## Grading Policy

The following is given as an example only.

Percent	Grade	Grade Points
90.0 - 100.0	A	4.00
87.0 - 89.9	A-	3.67
84.0 - 86.9	B+	3.33
81.0 - 83.9	B	3.00
78.0 - 80.9	B-	2.67
75.0 - 79.9	C+	2.33
72.0 - 74.9	C	2.00
69.0 - 71.9	C-	1.67
66.0 - 68.9	D+	1.33
63.0 - 65.9	D	1.00
60.0 - 62.9	D-	0.67
0 - 59.9	E	0.00

More information on UF grading policy may be found at:

[UF Graduate Catalog](#)  
[Grades and Grading Policies](#)

## Students Requiring Accommodations

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the [Disability Resource Center](#). It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

## Course Evaluation

Students are expected to provide feedback on the quality of instruction in this course by completing [online evaluations](#). Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students on the [Gator Evals page](#).

## University Honesty Policy

UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.” [The Honor Code](#) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

## Software Use

All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

## Student Privacy

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see the [Notification to Students of FERPA Rights](#).

Our class sessions may be audio visually recorded for students in the class to refer back and for enrolled students who are unable to attend live. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live. The chat will not be recorded or shared. As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.

## Campus Resources:

### Health and Wellness

#### **U Matter, We Care:**

If you or a friend is in distress, please contact [umatter@ufl.edu](mailto:umatter@ufl.edu) or 352 392-1575 so that a team member can reach out to the student.

**Counseling and Wellness Center:** [counseling.ufl.edu/cwc](http://counseling.ufl.edu/cwc), and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

#### **Sexual Assault Recovery Services (SARS)**

Student Health Care Center, 392-1161.

University Police Department at 392-1111 (or 9-1-1 for emergencies), or [police.ufl.edu](http://police.ufl.edu).

### Academic Resources

**E-learning technical support**, 352-392-4357 (select option 2) or e-mail to [Learning-support@ufl.edu](mailto:Learning-support@ufl.edu).

**Career Resource Center**, Reitz Union, 392-1601. Career assistance and counseling.

**Library Support**, Various ways to receive assistance with respect to using the libraries or finding resources.

**Teaching Center**, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring.

**Writing Studio**, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers.

**Student Complaints Campus**

**On-Line Students Complaints**

## Class Schedule

Maslov: Transport in Correlated Electron Systems (8 classes)

Hirschfeld: Unconventional Superconductivity II (6 classes)

Muttalib: Geometric frustration in Ising magnets (7 classes)

Wang: Introduction to Bosonization (7 classes)

No class: Thanksgiving

### AUGUST

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8

### SEPTEMBER

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12

9 10 11 12 13 14 15  
16 17 18 19 20 21 22  
23 24 25 26 27 28 29  
30 31

13 14 15 16 17 18 19  
20 21 22 23 24 25 26  
27 28 29 30

### OCTOBER

S	M	T	W	T	F	S
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11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

### NOVEMBER

S	M	T	W	T	F	S
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15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

### DECEMBER

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		