2015 Boulder Summer School

Soft Matter In and Out of Equilibrium

July 6 – 31, 2015

Detailed schedule

All lectures are in **Duane Physics Room G130**
Public lecture in **Duane Physics Room G1B30**

Sunday, July 5th

6:30pm – 8:30pm	Registration mixer with refreshments WeatherTech Café in the C4C

Week 1, July 6 – 10

Elasticity, chirality and frustration in soft matter

Monday, July 6th

8:30 – 9:00	**Leo Radzihovsky** *Welcome and Introduction*
9:00 – 10:30	**Tom Lubensky** *Elastomers and isostatic lattices I*
10:30 – 11:00	Coffee Break
11:00 – 12:30	**Alex Levine** *Filaments, membranes and surfaces I*
12:30 – 13:45	Lunch
14:00 – 15:30	**Efi Efrati** *Chirality and frustration I*
15:30 – 16:30	**participants' introductions**

Tuesday, July 7th

9:00 – 10:30	**Tom Lubensky** *Elastomers and isostatic lattices II*
10:30 – 11:00	Coffee Break
11:00 – 12:30	**Efi Efrati** *Chirality and frustration II*
12:30 – 13:45	Lunch
14:00 – 15:30	**Alex Levine** *Filaments, membranes and surfaces II*
19:00 – 20:00	**David Nelson** - Public lecture, Duane Physics G1B30 *The Physics of Thermal Crumpling and Wrinkling*

Wednesday, July 8th

9:00 – 10:30	**Tom Lubensky** *Elastomers and isostatic lattices III*
10:30 – 11:00	Coffee Break
11:00 – 12:30	**Efi Efrati** *Chirality and frustration III*
12:30 – 13:45	Lunch
14:00 – 15:30	**Alex Levine** *Filaments, membranes and surfaces III*

Thursday, July 9th

9:00 – 10:30	**Vincenzo Vitelli** tutorial*: Topological mechanics I*
10:30 – 11:00	Coffee Break
11:00 – 12:30	**David Nelson** seminar*: Statistical mechanics of free-standing graphene ribbons*
12:30 – 13:45	Lunch
14:00 – 15:30	**Vincenzo Vitelli** tutorial*: topological mechanics II*
19:00 – 22:00	**Poster session I** *11th Floor Commons Room*

Friday, July 10th

9:00 – 10:30	**William Irvine** Fluid hydrodynamics I
10:30 – 11:00	Coffee Break
11:00 – 12:30	**Narayanan Menon** *Mechanics of wrinkling, folding, & crumpling I*
12:30 – 13:45	Lunch
14:00 – 15:30	
17:30 – 19:00	**Weeks overview, discussion, Q&A** What have we learned?
19:00 – 21:30	**Catered dinner** (11th floor, Gamow Tower, Duane Physics)

Generalized elasticity and heterogeneity in soft matter

Monday, July 13th

9:00 – 10:30	**Eric Dufresne** *Surface tension, droplets, & contact lines I*
10:30 – 11:00	Coffee Break
11:00 – 12:30	**Narayanan Menon** *Mechanics of wrinkling, folding, & crumpling II*
12:30 – 13:45	Lunch
14:00 – 15:30	**William Irvine** Fluid hydrodynamics II
15:30 – 17:00	**Student activity**

Tuesday, July 14th

9:00 – 10:30	**Mehran Kardar** *Introduction to quenched disorder I*
10:30 – 11:00	Coffee Break
11:00 – 12:30	**Eric Dufresne** *Surface tension, droplets, & contact lines II*
12:30 – 13:45	Lunch
14:00 – 15:30	**Oleg Lavrentovich** *Liquid crystals I*
18:00 – 20:00	**Dessert on Flagstaff Mountain** *busses leave south of C4C at 6pm*

Wednesday, July 15th

9:00 – 10:30	**Mehran Kardar** *Introduction to quenched disorder II*
10:30 – 11:00	Coffee Break
11:00 – 12:30	**Narayanan Menon** *Mechanics of wrinkling, folding, & crumpling III*
12:30 – 13:45	Lunch
14:00 – 15:30	**Oleg Lavrentovich** *Liquid crystals II*
19:00 – 22:00	**Poster session II** *11th floor Commons Room*

Thursday, July 16th

9:00 – 10:30	**Leo Radzihovsky**

seminar: *anomalous elasticity in membranes, liquid crystals & elastomers – "critical" phases*

10:30 – 11:00 Coffee Break

11:00 – 12:30 **Eric Dufresne**
Surface tension, droplets, & contact lines III

12:30 – 13:45 Lunch

14:00 – 15:30 **Oleg Lavrentovich**
Liquid crystals III

Friday, July 17th

9:00 – 10:30 **Mehran Kardar**
Introduction to quenched disorder III

10:30 – 11:00 Coffee Break

11:00 – 12:30 **Noel Clark**
seminar: *Chiral liquid crystals, DNA, origin of life*

12:30 – 13:45 Lunch

14:00 – 15:30 **Ivan Smalyukh**
seminar: *Liquid crystals skyrmions, topological colloids*

15:30 – 16:30 **Weeks overview, discussion, Q&A**
What have we learned?

Week 3, July 20 – 24
Nonequilibrium, heterogeneous soft matter

Monday, July 20th

9:00 – 10:30	**Sid Nagel** *glasses I*
10:30 – 11:00	Coffee Break
11:00 – 12:30	**Wiliam Irvine** seminar: *Topological mechanics of gyroscopic metamaterials*
12:30 – 13:45	Lunch
14:00 – 15:30	**Noel Clark** seminar: *Liquid crystals in a random porous matrix*

Tuesday, July 21th

9:00 – 10:30	**Sid Nagel** *glasses II*
10:30 – 11:00	Coffee Break
11:00 – 12:30	**William Irvine** seminar*: Life of vortex knots: conservation of helicity across scales*
12:30 – 13:45	Lunch
14:00 – 15:30	**student activity**

Wednesday, July 22th

9:00 – 10:30	**Pierre Le Doussal** *Driven disordered systems I*
10:30 – 11:00	Coffee Break
11:00 – 12:30	**Sid Nagel** *glasses III*
12:30 – 13:45	Lunch
19:00 – 22:00	**Poster session III** *11th Floor Commons Room*

Thursday, July 23th

9:00 – 10:30	**Pierre Le Doussal** *Driven disordered systems II*
10:30 – 11:00	Coffee Break
11:00 – 12:30	**Mark Bowick** seminar*: Flat faces from floppy vesicles*
12:30 – 13:45	Lunch

14:00 – 15:30 **Student activity**

Friday, July 24th

9:00 – 10:30 **Pierre Le Doussal**
Driven disordered systems III

10:30 – 11:00 Coffee Break

11:00 – 12:30 **Cristina Marchetti**
Microscopics to hydrodynamics of active matter I

12:30 – 13:45 Lunch

14:00 – 15:30 **Lisa Manning**
seminar*: Computational glassy dynamics in cell*

15:30 – 16:30 **Weeks overview, discussion, Q&A**
What have we learned?

19:00 – 21:30 **Catered dinner** (11th floor, Gamow Tower, Duane Physics)

Week 4, July 27 – 31
Active matter

Monday, July 27th

9:00 – 10:30	**John Toner** *Hydrodynamics of active matter I*
10:30 – 11:00	Coffee Break
11:00 – 12:30	**Cristina Marchetti** *Microscopics to hydrodynamics of active matter II*
12:30 – 14:00	Lunch
14:30 – 16:00	**Zvonimir Dogic** *Active liquid crystals I*

Tuesday, July 28th

9:00 – 10:30	**Jean-François Joanny** *Cytoskeletons, cells, tissue I*
10:30 – 11:00	Coffee Break
11:00 – 12:30	**John Toner** *Hydrodynamics of active matter II*
12:30 – 13:45	Lunch
14:00 – 15:30	**Cristina Marchetti** *Microscopics to hydrodynamics of active matter III*

Wednesday, July 29th

9:00 – 10:30	**Jean- François Joanny** *Cytoskeletons, cells, tissue II*
10:30 – 11:00	Coffee Break
11:00 – 12:30	**John Toner** *Hydrodynamics of active III*
12:30 – 13:45	Lunch
14:00 – 15:30	**Jennifer Ross** seminar: *Microtubules organization*

Thursday, July 30th

9:00 – 10:30	**Jean- François Joanny** *Cytoskeletons, cells, tissue III*
10:30 – 11:00	Coffee Break
11:00 – 12:30	**Zvonimir Dogic** *Active liquid crystals II*
12:30 – 13:45	Lunch
14:00 – 15:30	**Mark Bowick** seminar*: Something interesting*

Friday, July 31st

9:00 – 10:30	**Zvonimir Dogic** *Active liquid crystals III*
10:30 – 11:00	Coffee Break
11:00 – 12:30	**What did we learn this month?** *Overview, discussion & feedback*
12:30 – 14:00	Lunch