

Here's a (rough) day--by--day break down of what we've been covering.

### **Week 1:**

Lec. 1: Introduction and Blurb

Lec. 2: Extreme Value theory 101 and Poisson--Dirichlet

References: Bolthausen's lecture notes and Resnick's book on Extreme value theory

### **Week 2:**

Lec. 3: Characterization--by--invariance for Poisson--Dirichlet and Gaussian IBP

Lec. 4: Characterization--by--invariance for Poisson--Dirichlet

Refs: Bolthausen's Lecture notes; Panchenko Chap. 1 and 2; Bovier, Chapter 9

### **Week 3:**

Lec. 5: Gaussian Comparison Theory

Lec. 6: Gaussian Comparison Theory

Refs: Ledoux--Talagrand, Bolthausen's Lectures, Talagrand Chap. 2.

### **Week 4:**

Lec. 5: The Replica Symmetric Bound

Lec. 6: Sketch of Proof of Parisi Formula

Refs: Talagrand Chap 2, Talagrand Vol 2, Panchenko Chap. 2-3

### **Week 5:**

Lec. 7: Ruelle Probability Cascades

Lec. 8: ROSt functionals

Refs: Panchenko Chap. 2, Aizenman, Sims, Starr papers

### **Week 6:**

Lec. 9: Ghirlanda--Guerra Identities

Lec. 10: Consequences of Ghirlanda--Guerra Identities

### **Week 7:**

Lec. 9: The Ultrametricity Theorem

Lec. 10: Proof of Parisi Formula

### **Week 8: spring break**

### **Week 9:**

Lec. 9: Dynamic programming for the Parisi PDE and strict convexity

Lec. 10: Ghirlanda--Guerra for generic models