

PHYCS 598CFT

Conformal Field Theory

Instructor: Sheldon Katz

Office and Hours: 429 Loomis, Thursday 9–10:20 or by appointment, 5-0685, katzs@uiuc.edu.

Text: Di Francesco, Mathieu, Sénéchal, Conformal Field Theory, Springer

Course Description:

Conformal field theories are quantum field theories that are invariant under conformal symmetry. In statistical systems, their importance comes from the fact that they describe behavior near second order phase transitions. Conformal field theories are thus fundamental tools in condensed matter theory. They also play a central role in the worldsheet dynamics of perturbative string theory. Examples in higher dimensions are also known in supersymmetric gauge field theories and often have dual gravitational descriptions.

This course will be a systematic exploration of conformal invariance and conformal field theories. We will study a variety of examples, along with their applications in condensed matter physics and string theory. We will also survey recent research relating to conformal field theories.

Prerequisite: PHYCS 582 or permission of the instructor.

Website. Course materials including homework assignments will be available on the web. Initially the URL will be

<http://www.math.uiuc.edu/~katz/class/s05/598cft/>

This may get moved onto the physics server at a later date. In any case, the course pages will always be linked from the instructor's home page

<http://www.math.uiuc.edu/~katz/>