

Nov 21 UG Seminar Notes

Intro to IQHE and Topological Matter

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Abstract

These are notes summarizing all of the content I planned on talking about during my UG seminar on Nov 21. Any errors/false claims made are a result of me being silly-goofy. Please feel free to contact me with corrections, criticism, concerns, etc.

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1 Introduction

[MooreMoessner21]

1.1 What we'll cover

1.2 What we won't cover

2 Recalling some E&M

3 Recalling some QM

4 Crash Course in Condensed Matter Physics

5 Crash Course in Topology

6 Integer Quantum Hall Effect

6.1 Landau Levels

6.2 Laughlin's pumping argument

6.3 The Role of Topology

Why can we ignore electron-electron interactions in the IQHE?

7 2D Topological Insulators