## COURSE NOTES ON QUANTIZATION AND COHOMOLOGY, WINTER 2007

## JOHN BAEZ\* NOTES BY APOORVA KHARE\*

## Contents

| <ol> <li>Jan 16, 2007: Schrödinger's equation</li> <li>Questions</li> <li>Motivating geometric quantization</li> </ol>  | $2\\2\\4$                  |
|---|----------------------------|
| <ul><li>2. Jan 23, 2007: Categorification</li><li>2.1. A secret functor</li><li>2.2. Bringing in arbitrary categories</li></ul>   | 6<br>6<br>7                |
| <ol> <li>Jan 30, 2007: Physics is rigged!</li> <li>The analogous viewpoints</li> <li>Switching between the classical and quantum viewpoints</li> <li>Wick rotation and a spring in imaginary time (revisited)</li> </ol>  | 9<br>9<br>9<br>11          |
| <ul> <li>4. Jan 23, 2007: Statistical mechanics and deformation of rigs</li> <li>4.1. Statistical mechanics "quantizes" strings</li> <li>4.2. A family of rigs via the Boltzmann map</li> <li>4.3. The analogous situation for quantization</li> </ul>                          | 12<br>12<br>13<br>14       |
| <ul><li>5. Feb 13, 2007: An example of path integral quantization - I</li><li>5.1. Example: free particle on the real line</li><li>5.2. Doing the math</li></ul>  | 15<br>15<br>16             |
| <ul> <li>6. Feb 20, 2007: An example of path integral quantization - II</li> <li>6.1. Time-evolution operators</li> <li>6.2. Bringing in the Hamiltonian</li> <li>6.3. Computing the normalizing factors</li> </ul>   | 19<br>19<br>20<br>21       |
| <ul> <li>7. Feb 27, 2007: More examples of path integrals</li> <li>7.1. A potential problem</li> <li>7.2. The Lie-Trotter Theorem and self-adjoint operators</li> <li>7.3. Generalization to complete Riemannian manifolds</li> <li>7.4. Back to the general picture</li> </ul> | 24<br>24<br>25<br>26<br>26 |