FINAL TOPICS FOR GAUGE THEORY AND TOPOLOGY: AN INTRODUCTION

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(1) *Trace of the heat kernel and Weyl's law.* Reference: Roe - Elliptic operators, asymptotic methods, and topology, Chapters 7 and 8.
(2) *Principal bundles and Cartan geometries.* Reference: Sharpe - Differential Geometry: Cartan's Generalization of Klein's Erlangen Program.
(3) *Formality of Kähler manifolds.* Reference: Hubrechts - Complex Geometry: an introduction, Chapter 3.
(4) *ALE gravitational instantons via moment maps.* Reference: Kronheimer - The construction of ALE spaces as hyper-Kähler quotients.
(5) *Uhlenbeck compactness.* Reference: Donaldson, Kronheimer - The geometry of four-manifolds, Section 2.3.
(6) *Convexity in symplectic geometry.* Reference: Cannas da Silva - Lectures in symplectic geometry, Chapters 27-29.
(7) *Proof of Rokhlin's theorem via the Atiyah-Singer index theorem.* Reference: Roe - Elliptic operators, asymptotic methods, and topology, Chapters 4 and 13.
(8) *Bott connection and topology of foliations.* Reference: Bott - Lectures on characteristic classes and foliations.

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