TOPICS FOR FINAL PROJECTS

(1) Stationary phase formula with degenerate phase functions.
(Hormander Vol 1, §7.3.)

(2) The Stone-Von Neumann Theorem
(Guillemin-Sternberg, Chapter 16)
(B. Hall, Chapter 14)

(3) Fefferman-Phong inequality.
(*Microlocal version:* Hormander Vol 3, §18.6)
(*Microlocal version:* Fefferman-Phong, On positivity of pseudo-differential operators, Proceedings of the National Academy of Sciences 75 (1978), 4673-4674.)

(4) Damped wave equation.
(Zworski, §5.3)

(5) Quasimodes, pseudospectra
(Zworski, §7.4, §10.4, §12.5)
(Dencker-Sjöstrand-Zworski, *Pseudospectra of semiclassical differential operators*, Comm. Pure Appl. Math. 57(2004), 384-415.)

(6) The F.B.I. transform
(Zworski 13.1-3)
(Martinez chapter 3)

(7) Toeplitz quantization
(Zworski 13.4-5)

(8) Weyl's law: Dirichlet-Neumann bracketing proof
(Reed-Simon, Volume 4, §8.15)
(Zworski §6.2, 6.4)

(9) Various estimates for solutions of PDE (Agmon and Carleman, vanishing order)
(Zworski Chapter §7.1-3)

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(10) Semiclassical L^p estimates
(Zworski Chapter §10.3-4)
(H. Koch, D. Tataru and M. Zworski, *Semiclassical L^p estimates*, Annales Henri Poincare 8 (2007), 885-916.)

(11) PsDOs acting on sections of vector bundles.
For microlocal versions, c.f.:
(Erik van den Ban and Marius Crainic, Analysis on Manifolds, https://webspace.science.uu.nl/~ban00101/geoman2017/AS-2017rev.pdf)
(Liviu I. Nicolaescu, Pseudo-differential operators and some of their geometric applications,   https://www3.nd.edu/~lnicolae/Pseudo.pdf)

(12) Other topics? You propose and talk to me.