Table of Contents for SURV/223

Alice and Bob Meet Banach

- Alice and Bob: Mathematical Aspects of Quantum Information
  - Notation and basic concepts
  - Elementary convex analysis
  - The mathematics of quantum information theory
  - Quantum mechanics for mathematicians

- Banach and His spaces: Asymptotic Geometric Analysis Miscellany
  - More convexity
  - Metric entropy and concentration of measure in classical spaces
  - Gaussian processes and random matrices
  - Some tools from asymptotic geometric analysis

- The Meeting: AGA and QIT
  - Entanglement of pure states in high dimensions
  - Geometry of the set of mixed states
  - Random quantum states
  - Bell inequalities and the Grothendieck-Tsirelson inequality
  - POVMs and the distillability problem
  - Gaussian measures and Gaussian variables
  - Classical groups and manifolds
  - Extreme maps between Lorentz cones and the $SS$-lemma
  - Polarity and the Santaló point via duality of cones
  - Hints to exercises
  - Bibliography
  - Notation
  - Index