

# Seminar on Mathematical Foundations of Quantum Mechanics

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Summer 2016

- Week 1** (Apr 21, I. W.)  
Overview; Classical stochastic dynamics
- Week 2** (May 12, Robin Spratte)  
Quantum Markovian semigroups, complete positivity  
([2, Rebolledo's article])
- Week 3-4** (May 19+26, Matthias Krüger & He Daoyin)  
*Ergodic properties of Markov processes*  
([1, Rey-Bellet's article])
- Week 4-5** (May 26+Jun 2, Liu Yingbo & I.W.)  
*Quantum dynamical systems*  
([1, Pillet's article])
- Week 6** (Jun 9, Dorothea Bahns)  
*Elements of operator algebras and modular theory*  
([1, Attal's article])
- Week 7** (Jun 16, Chiara Entradi)  
Physics perspective
- Week 8-10** (Jun 23+Jun 30+Jul 7, Russell's group)  
Quantum control
- Week 11** (Jul 14, Dorothea's group)  
Physics perspective

## References

- [1] S. Attal, A. Joye, and C.-A. Pillet (eds.), *Open quantum systems. I. The Hamiltonian approach*. Lecture Notes in Math., 1880, Springer, Berlin, 2006.
- [2] ———, *Open quantum systems. II. The Markovian approach*. Lecture Notes in Math., 1881, Springer, Berlin, 2006.
- [3] ———, *Open quantum systems. III. Recent developments*. Lecture Notes in Math., 1882, Springer, Berlin, 2006.
- [4] H.-P. Breuer and F. Petruccione, *The theory of open quantum systems*. Oxford Univ. Press, New York, 2002.
- [5] E. B. Davies, *Quantum theory of open systems*. Academic Press, London-New York, 1976.
- [6] A. Holevo, *Probabilistic and statistical aspects of quantum theory*. Quaderni. Monogr., 1, Edizioni della Normale, Pisa, 2011.