PHYS 6204 1.0: Elements of Quantum Scattering Theory (Winter 2016)

Course Director:	Tom Kirchner, PSE 228, ext. 33695, tomk@yorku.ca
WWW:	www.yorku.ca/tomk/phys6204.html (and Moodle)
Class Times:	morning (10:30 am) preferred, not before Feb. 1, 10–12 lecture hours in total
Office Hour:	By appointment
Books:	R. G. Newton, *Scattering theory of waves and particles*, McGraw-Hill 1966 L. S. Rodberg and R. M. Thaler, *Introduction to the quantum theory of scattering*, Academic Press 1967 J. R. Taylor, *Scattering theory: the quantum theory of nonrelativistic collisions*, Wiley 1972 H. Friedrich, *Scattering theory*, Springer 2013 plus chapters in many QM books (e.g. J. J. Sakurai and J. Napolitano, *Modern Quantum Mechanics*, Addison-Wesley 2011)

Content

"Discussion of one or more topics in quantum scattering theory. Specific topics will vary."

Suggested topics:

1 Elastic collisions

- Stationary formulation: differential equations
- Stationary formulation: integral equations
- Time-dependent formulation

2 Analytical structure of the S matrix (resonances and such)

3 The multi-channel problem: inelastic collisions

Marking scheme

- One assignment/take-home exam (at the end of the minicourse): 100 % of final grade