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Israel Michael Sigal* (im.sigal@utoronto.ca). *Statics and Dynamics of Magnetic Vortices.*

In this talk we consider the Ginzburg-Landau equations appearing in the theory of superconductivity and in the Abelian gauge field theory. Magnetic vortices are localized stationary solutions of these equations which play the key role in underlying physics. We review earlier and recent results on existence and stability of single magnetic vortices and lattices built out of them (Abrikosov lattices, for discovery of which A. Abrikosov received a Nobel prize). (So far these are the only theoretically, experimentally and numerically found solutions of these equations.) If time permits we will also discuss intervortex dynamics. (Received February 08, 2010)