1145-42-2281   **Fernando Gama**, **Alejandro Ribeiro*** (`aribeiro@seas.upenn.edu`) and **Joan Bruna**. *Graph Neural Networks and Graph Scattering Transforms.*

Convolutional Neural Networks (CNN) are layered information processing architectures in which each of the layers is itself the composition of a convolution operation with a pointwise nonlinearity. Graph Neural Networks (GNNs) replace the regular convolution operation with a graph convolution operation. We will discuss graph convolutions, their use in building GNN architectures, and explore stability of GNN operators. The stability results establish that a GNN is stable to graph deformations that are close to permutations. (Received September 25, 2018)