1046-42-2118   **J. Marshall Ash*** (`mash@math.depaul.edu`), Mathematics Department, DePaul University, Chicago, IL 60614, **Sergey Tikhonov**, Scuola Normale Superiore, and **James Tung**, DePaul University. *A generalization of an unpublished theorem of Wiener*

There is a well known but unpublished theorem of Norbert Wiener that asserts that if a function has nonnegative Fourier coefficients and is square integrable in a neighborhood of the origin, then it is square integrable on the entire torus. This result has a very simple proof. Over the years, various generalizations have been found. Also similar situations where the result is not true have been discovered. We find a fairly broad generalization here which appears to be the right statement to fit the original proof. (Received September 19, 2008)