TEMPLE UNIVERSITY

Department of Mathematics

Analysis Seminar

Room 617 Wachman Hall

Monday, October 26, 2015, 2:40 p.m.

Oscillatory integrals satisfying Varchenko's condition

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Abstract: I will consider scalar oscillatory integrals with real analytic phase satisfying a certain singularity condition considered by Varchenko in 1976. The talk has two main goals. The first is to give a new poof for how the oscillatory integral decays, and the second is to develop an asymptotic expansion. I will first discuss how Varchenko's condition allows for an integration by parts argument away from singularities of the phase. Next, I will show how we can apply dyadic decomposition and linear programming to reprove Varchenko's original upper bounds. There is no heavy machinery from algebraic geometry, allowing for a broader audience to understand why the result is true. Also, the techniques used in the new proof can be recycled to compute the asymptotic expansion of oscillatory integrals satisfying Varchenko's condition.