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Michael Greenblatt* (greenbla@uic.edu), Department of Mathematics, Statistics, and, Computer Science, 851 S. Morgan Street, Chicago, IL 60607. *Asymptotic behavior of degenerate oscillatory integrals in two dimensions.*

A theorem of Varchenko gives the order of decay of the leading term of the asymptotic expansion of a degenerate oscillatory integral with real-analytic phase in two dimensions. His theorem expresses this order of decay in a simple geometric way in terms of its Newton polygon once one is in certain coordinate systems called adapted coordinate systems.

In this talk, we will discuss some recent work of the speaker which shows that there are always certain adapted coordinate systems in which one can get explicit formulas not only for the order of decay of the leading term, but also for the coefficient of this term. There are three rather different formulas corresponding to three different types of Newton polygon. Some consequences will be described, as will some weaker analogues for the case where the phase is merely smooth. (Received August 04, 2008)