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## High oscillatory quadrature and its applications

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Highly oscillatory problems 2

Highly oscillatory quadrature has been a problem for several years. In this talk we will show how we can solve this problem. The problem we have to evaluate is in one dimension  $\int_0^1 f(x) \exp(\omega g(x)) dx$  for a given  $f$  and large  $\omega$ . In this talk we discuss the one dimensional problem in some details. The clue is to use generalized Filon quadrature. By understanding the one-dimensional case we will indicate how the multi dimensional case can be solved. Some indications of how we can treat the equivalent Fredholm problem with high oscillations will be given. In summary we can say; The more our problem oscillates the better our results are.