1052-60-30 **Radu S Tunaru*** (r.tunaru@city.ac.uk), 106 Bunhill Row, London, London EC1Y 8TZ, England. *Constructing approximation algorithms for financial calculus from weak convergence results.*

We develop a technique to generate approximation algorithms for integral calculations encountered in financial calculus. While the proofs are probabilistic, the algorithms are deterministic in nature. The methods can be applied to one-dimensional and multi-dimensional problems in a unified manner. For the one-dimensional set-up it is proved that the approximation grid is a dense set in the set of real numbers. We show how to circumvent some problems related to the central limit theorem for multinomial distributed vectors. The technique can be applied to a wide range of problems such as pricing European options, spread options, Asian options, calculating the greek parameters and to problems related to portfolio analysis. While the methods are developed with the financial applications set in mind, they can also be applied to other areas where calculations of integrals with rough integrands or high-dimensional integration are needed." (Received July 21, 2009)