1096-AD-1173 **Vladimir N Temlyakov*** (temlyakovv@gmail.com), Math. Dept., University of South Carolina, Columbia, SC 29208, and **V.N. Temlyakov**, University of South Carolina and Steklov Institute of Mathematics. *Multivariate numerical integration*

We discuss a construction of good cubature formulas for multivariate numerical integration. These cubature formulas are near optimal for classes of functions with bounded mixed derivative. They are also universal in the sense that they are near optimal for all anisotropic Sobolev-Nikol'skii smoothness classes. Construction of such cubature formulas is closely connected with deep problems in number theory. Number theoretic methods are used for obtaining upper estimates of optimal errors which means the construction of concrete good cubature formulas. For this purpose different methods are used, beginning with sufficiently elementary methods for investigating Fibonacci and Korobov cubature formulas and finishing with cubature formulas based on algebraic properties of real roots of irreducible polynomials. Research was supported by NSF grant DMS-1160841 (Received September 13, 2013)