Seminar on Derived Categories and Applications …
(Winter 2006)

I am planning on running an informal weekly seminar on **"Derived Categories and Applications to Special Values of L-functions"** during the next two quarters (Winter and Spring 2006). The seminar will meet for 1 1/2 hrs every week. The precise schedule will be determined at the organizational meeting to be held sometime in January 2006. Everyone is welcome to attend and lecture in the seminar. Graduate students are especially encouraged to participate. The list of people who have already agreed to participate and give lectures includes: Orest Bucicovschi, Jason Colwell, Mark Colarusso, Caleb Emmons, Wee Teck Gan, Michael Gurvich, Nitu Kitchloo, Justin Roberts, Barry Smith, William Stein, Peter Stevenhagen.

Brief Description:

1. During the Winter quarter, we will cover the first chapter in A. Borel's "Algebraic D-Modules" (by A. Borel et al., Academic Press 1987.) The chapter is entitled "Derived categories and derived functors" (Fr.) (by P.-P. Grivel, pp. 1-109).

2. During the last part of the Winter (if time permits) and the beginning of the Spring quarters, we will cover the paper "The projectivity of the moduli space of stable curves I: Preliminaries on *det* and *div*" (by F. Knudsen and D. Mumford, Math. Scand. 39 (1976), pp. 19-55) or its updated version by F. Knudsen (unpublished).

3. During the Spring quarter, we will cover a couple of papers by David Burns, Matthias Flach and their collaborators, focusing on applications of 1) and 2) above to The Equivariant Tamagawa Number Conjecture for Artin and Elliptic Motives. This is a generalization of the Bloch-Kato Conjecture on special values of motivic L-functions, which links analytic and arithmetic invariants of the motives in question and refines and generalizes Stark's Conjecture and the Birch and Swinnerton-Dyer Conjecture.

Parts 1) and 2) above will involve no number theory at all. Part 3) is quintessentially number theoretic in flavor and is the main reason why the number theoretically minded volunteering lecturers listed above including myself are interested in learning about 1) and 2).

If you are interested in lecturing in or simply attending this seminar, please let me know via e-mail. Once again, everyone is welcome to attend and lecture.

Cristian Popescu