

**Meeting:** 1003, Atlanta, Georgia, SS 13A, AMS Special Session on Algebraic Geometry Codes

1003-94-1248      **Heeralal Janwa\*** ([hjanwa@cims.nyu.edu](mailto:hjanwa@cims.nyu.edu)), Courant Institute, 251 Mercer Street, NY, NY 10012.  
*New (Explicit) Constructions of Asymptotic Families of Constant Degree Expander Graphs from Algebraic Geometric (AG) Codes and Their Applications to Tanner Codes.*

New (explicit) constructions of asymptotic families of constant degree expander graphs based on highly expanding “seed graphs” in the zig-zag product construction are given. The seed graphs are constructed from algebraic geometric (AG) Codes and related structures. Their parameters and those of their Tanner codes are analyzed. Some of these codes are very suitable for decoding by the algorithms of Sipser and Spielman, Zémor, and Janwa and Lal, Barg and Zı́nor, and Guruswami and Indyk, and results on minimum distance and decoding performance of some of these codes are presented. Some asymptotic results are also presented. Applications to sparse quasi-random graphs, pseudo-random generators, and cryptography are also discussed. (Received October 05, 2004)