Algebra Seminar

Triality Without Octonions

Speaker

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4:00 p.m., HH-3017

Abstract:

Triality, the phenomena arising from the extra symmetries of the Dynkin diagram D_4, is traditionally explained using octonion algebras. We will review this typical approach before discussing an alternative using Chevalley generators. We will discuss how the elementary subgroup generated by Chevalley generators may differ from its algebraic group and how these differences can be managed by working with sheaves. This allows us to use computations with the generators of the Spin group to identify trialitarian phenomena. Finally, we will discuss how, using either approach, many standard facts about triality over fields also hold more generally over schemes.