Title: Transfer principles and the Kato–Kuzumaki conjecture

Speaker : Felipe Gambardella

Abstract : Looking for a Diophantine characterisation of cohomological dimension of fields, Kato and Kuzumaki introduced the C_i^q property for every pair of non-negative integers i, q. These properties are inspired by Lang's notion of a C_i field. An interesting property of C_i fields is that they satisfy a transfer principle with respect to equicharacteristic complete discrete valuations – e.g. if a field k is C_i the field of Laurent series $k(\!(t)\!)$ is C_{i+1}. Moreover, a similar transfer principle is satisfied by the C_0^q property. However, for the general C_i^q property, no such transfer result is known to hold and the situation is more subtle than the one of C_i fields. For instance, the optimistic statement "$k(\!(t)\!)$ satisfies C_{i+1}^q whenever k satisfies C_i^q" is false. This talk reports on joint work with Konstantinos Kartas. I will present a transfer principle for C_i fields with respect to non-discrete valuations. This principle has as a corollary a transfer principle for a variant of the Kato-Kuzumaki properties. Moreover, this is enough to establish a conjecture of Kato and Kuzumaki for several fields of arithmetic interest such as the perfection of $\mathbf{F_p}(\!(\mathbf{t_1})\!)\dots(\!(\mathbf{t_n})\!)$ or $\mathbf{C}(\mathbf{x_1},\dots,\mathbf{x_n})(\!(\mathbf{t_1})\!)\dots(\!(\mathbf{t_m})\!)$.

Schedule : Thursday 23rd April, 2pm to 3pm