Amenability, affine isometric actions and embedding of trees in Banach spaces

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Here is a plan of the course (the way it will be spread out in the 3 lectures is not yet clear):

- Introduction to amenable groups (Von Neumann and Folner criterion, stability properties, examples and counterexamples).

- Large-scale geometry of locally compact groups and Cayley-Abels graphs. Example of an amenable group whose CA graph is a tree: the affine group over Q_p.

- Isometric actions on normed vector spaces. Relation between displacement of the action, and distortion of the orbits.

- Central result: a Banachic version of a result of Delorme for isometric actions of the affine group over Q_p.

- Corollary: a new and original proof of Bourgain's theorem that a 3-regular tree does not embed bi-lipschitz into a superreflexive Banach space.