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SELF-SIMILAR TILINGS AND LOCAL RULES. THE TRIBONACCI CASE.

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Abstract

The study of infinite words (symbolic dynamics) leads to distinguish two particular classes of dynamical systems properties dramatically different : substitutive systems (symbolic "self-similar" systems) and subshifts of finite type (characterized by local rules).

This distinction is deeply challenged in "size 2", that is to say for the study of tilings of the plane, first by the existence of aperiodic tilings characterized by certain local rules (Robinson) and by results of Moses and Goodman-Strauss showing that large classes of "self-similar" tilings are indeed characterized by local rules.

The self-similar tilings (quasicrystals) appearing in the study of symbolic Pisot substitutions, particularly those representing discrete planes (with quadratic slopes), and more specifically the so-called Tribonacci tiling (aperiodic tiling by Rauzy fractals) are not covered by the result of Goodman-Strauss.

I will try to show how, using the same ideas, we can adapt existing results for characterizing Tribonacci tiling with local rules.

Date: Thursday, November 4, 2010

Time: 15:00

Place: IMBM Seminar Room, Boğaziçi University