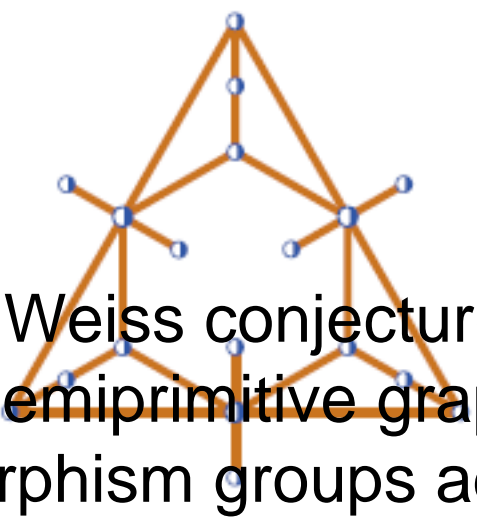


# Bled'11 - 7th Slovenian International Conference on Graph Theory

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## The Weiss conjecture for locally-semiprimitive graphs with automorphism groups admitting composition factors of bounded rank

### Content :

This talk is the second in a series of three presentations (together with Primož Potoknik and Gabriel Verret) concerning the Weiss conjecture and its generalisations. Let  $\Gamma$  be a connected  $G$ -vertex-transitive graph,  $v$  be a vertex of  $\Gamma$  and  $L$  be the permutation group induced by the vertex stabiliser  $G_v$  on the neighbourhood  $\Gamma(v)$  of  $v$ . The pair  $(\Gamma, G)$  is said to be locally- $L$ . A transitive permutation group  $L$  is graph-restrictive if there exists a constant  $c(L)$  such that, for every locally- $L$  pair  $(\Gamma, G)$  and an arc  $(u, v)$  of  $\Gamma$ , the size of the arc stabiliser  $G_{\{u, v\}}$  is at most  $c(L)$ .

In the first part of this talk, we give some details of the proof that, if  $L$  is graph-restrictive, then  $L$  is semiprimitive (that is, every normal subgroup of  $L$  is either transitive or semiregular). This gives a positive solution to one of the implications of the main conjecture given in the first talk of this series (that is,  $L$  is graph-restrictive if and only if  $L$  is semiprimitive).

In the second part of this talk, we show that the other implication of the conjecture (and in particular the Weiss conjecture) holds true under the mild hypothesis that the group  $G$  has composition factors of bounded rank.

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