Cubic vertex-transitive graphs of girth seven

M. Lekše[1,2], P. Potočnik[1,2], M. Toledo[1,2]

[1] University of Ljubljana, Ljubljana, Slovenia
[2] IMFM, Ljubljana, Slovenia

Let Γ be a graph, and let v be a vertex and e an edge of Γ. The signature of e is the number of girth cycles that contain it, while the signature of v is the tuple of the signatures of all edges incident to it (ordered by size). We say that Γ is girth-regular if every vertex in the graph has the same signature. This concept was introduced by Potočnik and Vidali in 2019 as a generalization of edge-girth-regularity, and they later used it to classify cubic vertex-transitive graphs of girth at most 6. In this talk, we present a similar classification of cubic vertex-transitive graphs of girth 7 based on their signatures.