Automaticity of hyperbolic groups and analogous properties of their Gromov boundaries

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Abstract: The structure of hyperbolic groups has been described by Cannon in the 80's using the notion of automaticity. In the first part of the speech, we explain this concept and discuss analogous definitions which have been formulated regarding Gromov boundaries of hyperbolic groups. In particular, it turns out (as we will see in the second part) that the boundary satisfies the Dranishnikov's definition of a Markov compactum, which means that it can be presented as an inverse limit of polyhedra with certain regularity conditions. The proof will be based on a sequence of finite rank covers of the boundary, with a partial action of the group. As a corollary, we will obtain that boundaries of hyperbolic groups are also semi-Markovian spaces, defined as quotients of Cantor spaces by omega-regular languages of a particular kind, which has been proved by Coornaert and Papadopoulos under the assumption that G is torsion-free.