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Discrete cocompact subgroups of SL_2 over a nonarchimedean local field.

Let $G = SL_2(K)$, where K is the field of formal Laurent series over \mathbb{F}_q . Then G acts on its Tits building, the regular tree $T = T_{q+1}$, with quotient a single edge. For the field with two elements, we show that there is (up to isomorphism) only one discrete cocompact subgroup of G with quotient a single edge, namely an amalgam Γ of cyclic groups. This uses the classification of amalgams acting on the trivalent tree by Goldschmidt, and Bass' covering theory for graphs of groups. We also give a structure theorem for discrete cocompact subgroups of G , and exhibit graphs of groups defining additional cocompact lattices in G , including some cases where a covering of edge-indexed graphs can be extended to a covering morphism of graphs of groups. (Received January 31, 2008)