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**Amenability and Kunze-Stein property for groups acting on a tree.** (English) Zbl 0671.43003  
Pac. J. Math. 135, No. 2, 371-380 (1988).

Let  $X$  be a locally finite tree and  $\text{Aut}(X)$  the locally compact group of all isometries of  $X$ . It is proved that a closed subgroup  $G$  of  $\text{Aut}(X)$  is amenable if and only if  $G$  has one of the following properties: (i)  $G$  fixes a vertex; (ii)  $G$  leaves invariant an edge; (iii)  $G$  fixes an end of  $X$ ; (iv)  $G$  leaves invariant a pair of ends of  $X$ .

A locally compact group  $G$  is said to be a Kunze-Stein group if  $L^p(G) * L^2(G) \subset L^2(G)$  for every  $1 < p < 2$ . Let  $X$  be a homogeneous tree and  $G$  a subgroup of  $\text{Aut}(X)$  acting transitively on the vertices and on an open subset of the boundary of  $X$ . It is shown that  $G$  is either amenable or a Kunze-Stein group. The proofs depend on results on *J. Tits* [Essays on topology and related topics, 188-211 (1970; Zbl 0214.513)].

Reviewer: [M.B.Bekka](#)

**MSC:**

- 43A07 Means on groups, semigroups, etc.; amenable groups
- 20B27 Infinite automorphism groups
- 05C25 Graphs and abstract algebra (groups, rings, fields, etc.)
- 43A15  $L^p$ -spaces and other function spaces on groups, semigroups, etc.
- 43A70 Analysis on specific locally compact and other abelian groups
- 05C05 Trees

Cited in **3** Reviews  
Cited in **19** Documents

**Keywords:**

groups acting on trees; amenable groups; locally compact group of; isometries; locally finite tree; Kunze-Stein group; homogeneous tree

**Full Text:** [DOI](#)