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Collin Bleak* (collin@math.binghamton.edu). *Solvability in Groups of Piecewise-linear Homeomorphisms of the Unit Interval.*

We investigate subgroups of the group $PL_o(I)$ of piecewise-linear, orientation preserving homeomorphisms of the unit interval with finitely many breaks in slope, and also subgroups of Thompson's group F . We find geometric criteria determining the derived length of any such group, and use this criteria to classify the solvable and non-solvable subgroups of $PL_o(I)$ and of F .

Let H be a subgroup of $PL_o(I)$ or F . We find that H is solvable if and only if H is isomorphic to a group in a well described class \mathfrak{R} of groups. We also find that H is non-solvable if and only if we can embed a copy of a specific non-solvable group W into H .

We strengthen the non-solvability classification by finding weak geometric criteria under which we can embed other groups (all containing W) into non-solvable subgroups of $PL_o(I)$ or F . (Received July 29, 2005)