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A. Yu. Olshanskii* (alexander.olshanskiy@vanderbilt.edu), 1326 Stevenson Center,
Vanderbilt University, Nashville, TN 37240. *Space functions of finitely presented groups.*

To define the space function $s(n)$ of a finitely presented group $G = \langle A \mid R \rangle$ we start with a word w over A of length at most n equal to 1 in G and use relations from R for elementary transformations to obtain the empty word; $s(n)$ bounds from above the tape space one needs to transform any word of length at most n vanishing in G to the empty word. One of the results obtained is the following criterion: A finitely generated group H has decidable word problem of polynomial space complexity if and only if H is a subgroup of a finitely presented group G with a polynomial space function.

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