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Title:	Computing n -th roots in SL2 and Fibonacci polynomials
Authors:	Kulshrestha, Amit (/jspui/browse?type=author&value=Kulshrestha%2C+Amit)
Keywords:	Fibonacci polynomials n-th roots SL 2
Issue Date:	2020
Publisher:	Springer
Citation:	Proceedings of the Indian Academy of Sciences: Mathematical Sciences, 130 (1)
Abstract:	Let k be a field of characteristic ≠ 2. In this paper, we study squares, cubes and their products in split and anisotropic groups of type A1. In the split case, we show that computing n-th roots is equivalent to finding solutions of certain polynomial equations in at most two variables over the base field k. The description of these polynomials involves generalised Fibonacci polynomials. Using this we obtain asymptotic proportions of n-th powers, and conjugacy classes which are n-th powers, in SL 2(Fq) when n is a prime or n= 4. We also extend the already known Waring type result for SL 2(Fq) , that every element of SL 2(Fq) is a product of two squares, to SL 2(k) for an arbitrary k. For anisotropic groups of type A1, namely SL 1(Q) where Q is a quaternion division algebra, we prove that when 2 is a square in k, every element of SL 1(Q) is a product of two squares if and only if - 1 is a square in SL 1(Q).
Description:	Only IISERM authors are available in the record.
URI:	https://www.ias.ac.in/article/fulltext/pmsc/130/0031 (https://www.ias.ac.in/article/fulltext/pmsc/130/0031) http://hdl.handle.net/123456789/3200 (http://hdl.handle.net/123456789/3200)
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