

**Cremona, J. E.**

**On the Galois groups of the iterates of  $x^2 + 1$ .** (English) Zbl 0699.12018  
*Mathematika* 36, No. 2, 259-261 (1989).

Let  $f_1(x) = x^2 + 1$  and  $f_n(x) = f_1(f_{n-1}(x))$  for  $n \geq 2$ . Let  $K_n$  be the splitting field of  $f_n(x)$  over  $\mathbb{Q}$  and  $\Omega_n = \text{Gal}(K_n/\mathbb{Q})$ . *R. W. K. Odoni* [*Mathematika* 35, No. 1, 101–113 (1988; [Zbl 0662.12010](#))] proved that  $\Omega_n$  is a subgroup of the  $n$ -th wreath power of  $\mathbb{Z}/2\mathbb{Z}$  and gave a simple rational criterion for  $\Omega_n$  to be isomorphic to the  $n$ -th wreath power of  $\mathbb{Z}/2\mathbb{Z}$ . The author describes a computer program for Odoni's criterion and states that for all  $n \leq 5 \cdot 10^7$ ,  $\Omega_n$  is isomorphic to the  $n$ -th wreath power of  $\mathbb{Z}/2\mathbb{Z}$ .

Reviewer: [T. Soundararajan \(Madurai\)](#)

**MSC:**

[11R32](#) Galois theory  
[11-04](#) Software, source code, etc. for problems pertaining to number theory  
[12F10](#) Separable extensions, Galois theory

Cited in **1** Review  
Cited in **3** Documents

**Keywords:**

Galois groups of iterated polynomials; wreath power of finite; groups; computer program

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

**References:**

[1] Odoni, *Mathematika* 35 pp 101– (1988)

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