

Zeitschrift: L'Enseignement Mathématique
Band: 2 (1956)
Heft: 1-2: L'ENSEIGNEMENT MATHÉMATIQUE

Artikel: SOME PROBLEMS ON FINITE REFLECTION GROUPS

Bibliographie

Autor: Shephard, G. C.

DOI: <https://doi.org/10.5169/seals-32890>

Nutzungsbedingungen

Die ETH-Bibliothek ist die Anbieterin der digitalisierten Zeitschriften. Sie besitzt keine Urheberrechte an den Zeitschriften und ist nicht verantwortlich für deren Inhalte. Die Rechte liegen in der Regel bei den Herausgebern beziehungsweise den externen Rechteinhabern. [Siehe Rechtliche Hinweise.](#)

Conditions d'utilisation

L'ETH Library est le fournisseur des revues numérisées. Elle ne détient aucun droit d'auteur sur les revues et n'est pas responsable de leur contenu. En règle générale, les droits sont détenus par les éditeurs ou les détenteurs de droits externes. [Voir Informations légales.](#)

Terms of use

The ETH Library is the provider of the digitised journals. It does not own any copyrights to the journals and is not responsible for their content. The rights usually lie with the publishers or the external rights holders. [See Legal notice.](#)

Download PDF: 06.10.2024

ETH-Bibliothek Zürich, E-Periodica, <https://www.e-periodica.ch>

minors of the functional matrix $\partial I_i / \partial x_j$. This conjecture has neither been proved or verified.

(vi) This final property is the only one that holds for *irreducible* groups only. Suppose that r reflections in W serve to generate W (this is always the case for $k = R$, but not for $k = C$). Then it is possible to pick this set of generating reflections so that their product has characteristic roots

$$\exp\left(\frac{2\pi i m_j}{h}\right), j = 1, 2, \dots, r; h = \max(m_j) + 1$$

When $k = R$ it suffices to choose the reflections as those of a fundamental set and then take their product in any order [6; p. 765]. In this case also h has geometric significance as the number of sides of the PETRIE polygon [5; p. 223]. For $k = C$ no general rule for the selection of the correct set of reflections has been given.

This result has been verified for $k = C$, and general proofs are known for $k = R$, $r = 2, 3$ [6; p. 772].

REFERENCES

1. BOREL, Sur la cohomologie des espaces fibres principaux et des espaces homogènes de groupes de Lie compacts. *Annals of Math.*, 57 (1953), pp. 115-207.
2. BOTT, On torsion in Lie groups. *Proc. Nat. Academy of Sciences U.S.A.*, 40 (1954), pp. 586-588.
3. BURNSIDE, *Theory of Groups* (Cambridge, 1911).
4. CHEVALLEY, Invariants of Finite Groups generated by Reflexions. *American J. of Math.*, 77 (1955), pp. 778-782.
5. COXETER, *Regular Polytopes* (London, 1948, New York, 1949).
6. ——— The product of the generators of a group generated by reflections. *Duke Math. J.*, 18 (1951), pp. 765-782.
7. HOPF, Über die Topologie der Gruppen-Mannigfaltigkeiten und ihre Verallgemeinerungen. *Annals of Math.* (2), 42 (1941), pp. 22-52.
8. SHEPHARD, Unitary groups generated by reflections. *Can. J. of Math.*, 5 (1953), pp. 364-383.
9. ——— and TODD, Finite unitary reflection groups. *Can. J. of Math.*, 6 (1954), pp. 274-304.
10. STIEFEL, Über eine Beziehung zwischen geschlossenen Lie'schen Gruppen und diskontinuierlichen Bewegungsgruppen, etc. *Comm. Math. Helv.*, 14 (1941), pp. 350-380.