

Givental', A. B.

Groups of reflections in the theory of singularities. (Russian) Zbl 0753.57020
Operator theory in function spaces, Rev. Lect. 13th All-Union Sch., Kujbyshev/USSR 1988, 43-81 (1989).

[For the entire collection see [Zbl 0714.00017](#).]

This interesting paper deals with the study of the series of singularities A , D , E [see for instance *V. Arnol'd, A. N. Varchenko* and *S. M. Gusejn-Zade*, *Singularities of differentiable mappings. Classification of critical points, caustics and wave fronts* (Russian) (1982; [Zbl 0513.58001](#))] and it contains five sections. In sections 1-3 the connections between quaternionic finite groups, singularities of surfaces, simple Lie algebras, Dynkin diagrams and symmetry groups are presented. As application of these constructions one obtains the description of the above-mentioned singularities and of their discriminants as orbits of the symmetry groups of proper regular polyhedra. Sections 4-5 extend some of these results to nonsimple singularities of surfaces. A substantial result for unimodular quasihomogeneous singularities is given.

Reviewer: [D.Andrica \(Cluj-Napoca\)](#)

MSC:

- [57R45](#) Singularities of differentiable mappings in differential topology
- [58C25](#) Differentiable maps on manifolds
- [58K99](#) Theory of singularities and catastrophe theory
- [22E46](#) Semisimple Lie groups and their representations

Cited in 1 Review

Keywords:

singularities; quaternionic finite groups; singularities of surfaces; simple Lie algebras; Dynkin diagrams; symmetry groups; discriminants; orbits of the symmetry groups of proper regular polyhedra; nonsimple singularities of surfaces; unimodular quasihomogeneous singularities