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Review text:

Paper of four pages with two parts. The first half explains the mathematical language and physical motivation of study of the nodal structure of the wave functions of degenerate states as useful, e.g., for Monte-Carlo calculation of multi-electron systems in quantum chemistry. One is interested there in a choice of a basis in the related p-dimensional Hilbert subspace giving an "optimal" geometric structure of the nodal hypersurfaces and/or of the related fibre space.

The second half of the paper exposes the idea of using the methods of graph theory in such a context. Angular part of the one-particle state in d wave is chosen for illustration. The related (four) invariants (with respect to the group of motion) are displayed and shown to induce the six different geometries in the pertaining nodal structure (fibre bundle). The minimal number of the simply connected regions "of the same sign" (which is the main desired result) is show characterized, generically, by hyperboloids and, hence, equal to two in this case.