Abstract.

We improve — roughly by a factor 2 — the known bound on the multiplicity of the second eigenvalue of Schrödinger operators (i.e. Laplace plus potential) on closed surfaces. This gives four new topological types of surfaces for which Colin de Verdière's conjecture relating the maximal multiplicity to the chromatic number of the surface is verified. The proof goes by defining a space of "nodal splittings" of the surface, equipped with a double covering to which a Borsuk-Ulam type theorem is applied.