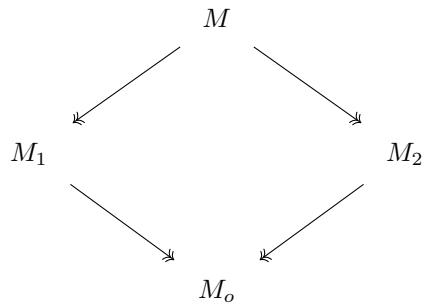


ON A CONVERSE TO SUNADA

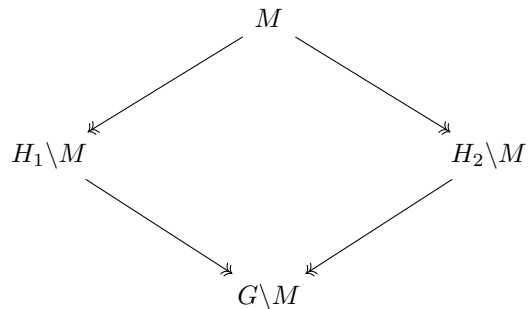
JUSTIN KATZ

In [1] Sunada introduced a group theoretic mechanism for producing pairs of isospectral manifolds. In this note, I formulate a converse to that construction and discuss some avenues by which one might prove them.

Suppose we are given two compact Riemannian manifolds, M_1 and M_2 which admit a finite covering map onto a common base M_o , and are both finitely covered by M .



Taking a finite cover, if necessary, we assume that the cover $M \rightarrow M_o$ is regular, and set $G = \text{Gal}(M/M_o)$. Let $H_i = \text{Gal}(M/M_i)$ denote the subgroups corresponding to the intermediate covers $M \rightarrow M_i$ for $i = 1, 2$. Letting G act on M by deck transformations, the diagram above is



REFERENCES

- [1] Toshikazu Sunada. Riemannian coverings and isospectral manifolds. 121(1):169–186. doi:10.2307/1971195.