## Partial Euler Characteristic, Normal Generations and the stable D(2) problem

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## Abstract

For a finite group G, it is proved that the deficiency def(G) is not less than the second partial Euler characteristic  $\mu_2(G)$ , assuming that any finitely generated perfect group is normally generated by a single element. The proof is based on the study of a stable version of Wall's D(2)problem. Moreover, we prove that a finite 3-dimensional CW complex of cohomological dimension at most 2 with a finite fundamental group Gis homotopy equivalent to a 2-dimensional CW complex after wedging ncopies of the 2-sphere  $S^2$ , where n depends only on G. As a byproduct, we show that a subcomplex X of a finite aspherical 2-dimensional complex is aspherical if and only if the fundamental group  $\pi_1(X)$  has a finite classifying space  $B\pi_1(X)$  of dimension at most 2.