# Breakdown and groups

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The concept of breakdown point was introduced by Hodges (1967) and Hampel (1968, 1971) and still plays an important though at times a controversial role in robust statistics. In practice its use is confined to location, scale and linear regression problems and to functionals which have the appropriate equivariance structure. Attempts to extend the concept to other situations have not been successful. In this talk we clarify the role of the group structure in determining the maximal breakdown point of functionals which have the equivariance structure induced by the group. The analysis suggests that if a problem does not have a sufficiently rich group of transformations under which it remains invariant then there is no canonical definition of breakdown and the highest possible breakdown point will be 1.