

Hessenberg varieties and hyperplane arrangements

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Hessenberg varieties are subvarieties of full flag varieties. The study of the topology of Hessenberg varieties makes connections with many research areas such as: geometric representation theory, quantum cohomology of flag varieties, graph theory, and hyperplane arrangements. In this talk, I will explain the connection between Hessenberg varieties and hyperplane arrangements. More concretely, the following three rings are isomorphic;

- (i) the cohomology ring of the regular nilpotent Hessenberg variety,
- (ii) the invariant subring of the cohomology ring of the regular semisimple Hessenberg variety under the Weyl group action,
- (iii) the quotient of the polynomial ring by the ideal coming from the logarithmic derivation modules of certain hyperplane arrangements.

This is joint work with Takuro Abe, Mikiya Masuda, Satoshi Murai, and Takashi Sato.