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Euler Flag Enumeration of Whitney-Stratified Spaces

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The “flag vector” is a vector that contains all the enumerative face incidence data of a polytope, and in the poset setting, all the enumerative chain data. It is known that for face lattices of polytopes, and more generally for Eulerian graded posets, the flag vector can be written as a “cd-index”, which is a non-commutative polynomial in two variables that miraculously removes all the linear redundancies among the flag vector entries. This phenomenon generalizes to all regular CW complexes.

I will relax the regularity conditions by showing that the cd-index exists for all manifolds whose boundary has a Whitney stratification. The setting of Whitney stratifications also expands the nature of questions in the area of flag enumeration. Time permitting, I will briefly indicate related work concerning arrangements of submanifolds.

This is joint work with Richard Ehrenborg and Mark Goresky.

No prior knowledge is assumed other than knowing how to count.
