Title: The exterior algebra in the cohomology of an arithmetic group

For general arithmetic groups (e.g. GL_n(Z) for n > 2)
the same Hecke eigensystem occurs in several cohomological degrees.
This phenomenon is not simply explained by "Lefschetz operators".
Numerically speaking it looks as if there is an exterior algebra on which acts on the cohomology.

I will propose a conjectural candidate for this exterior algebra: It should be the exterior algebra on a certain motivic cohomology group (namely, the motivic cohomology group that is attached to adjoint L-functions at the edge of the critical strip).

I will present evidence for this conjecture "tensored with R" and "tensored with Q_p."
The former uses ideas from the theory of periods of automorphic forms.
The latter is based on derived versions of usual structures: a derived Hecke ring
and a derived deformation ring.

Large parts of this are based on joint works with K. Prasanna and S. Galatius.

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