1125-16-2797 **Gus Lonergan***, gusl@mit.edu. *Frobenius and embedded Grassmannians.* Preliminary report.

Let G be a reductive algebraic group over $\mathbb{C}$. Geometric Satake gives an equivalence between spherical perverse sheaves mod p on the affine Grassmannian Gr and representations of the dual group $G^\vee$ defined over $\mathbb{F}_p$. It is natural to ask: does the Frobenius endofunctor F of $Rep(G^\vee)$ correspond to something geometric under this equivalence?

In fact, F can be described categorically, and thus geometrically in terms of nearby cycles and monodromy, using a version of the Beilinson-Drinfeld Grassmannian.

Now we make a parallel observation. Gr contains many embedded copies of Gr (and other partial affine flag varieties), for instance appearing as the components of the fixed-point set for the action of loop rotation by the p^{th} roots of unity. In fact, this 'fractal' nature of Gr seems analogous to the well-known 'fractal' nature of $Rep(G^\vee)$, and it is natural to ask if they are in any way compatible via geometric Satake.

We find evidence for such a compatibility by comparing the (equivariant) homologies of the relevant spaces. Finally, we speculate on the exact form such a compatibility might take, by globalizing these subspaces to the Beilinson-Drinfeld Grassmannian considered earlier, and fitting F into the picture. (Received September 20, 2016)