1139-53-482 **Sergey Grigorian*** (sergey.grigorian@utrgv.edu), 1201 W University Drive, Edinburg, TX 78539. *A heat flow of isometric G_2-structures.* Preliminary report.

Given a Riemannian metric g on a 7-dimensional manifold M that admits G_2-structures, the family of G_2-structures that are compatible with g is parametrized by sections of an $\mathbb{R}P^7$-bundle over M. A natural question is how to characterize the "best" G_2-structures within a given metric class. One way is to consider G_2-structures that minimize that L^2-norm of the torsion. This turns out to be equivalent to an energy functional on an associated octonion bundle and the critical points correspond to G_2-structures with divergence-free torsion. In this talk, we will consider properties of the gradient flow of this functional, and will show some estimates for quantities along the flow which give information regarding long-term existence. (Received February 19, 2018)