SEMINÁRIO DE GEOMETRIA

Dia 29 Junho (sexta-feira), às 13h30, sala 6.2.33

Flops and derived categories via *n*-tilting torsion classes

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Abstract: In the paper [2] we introduced the notion of n-tilting torsion class $\mathcal{E}$ in an abelian category $\mathcal{A}$.which generalizes the notion of tilting torsion class for $n = 1$ and produces an equivalence of derived categories $D(\mathcal{A}) \cong D(\mathcal{H}_{\mathcal{E}})$ where $\mathrm{H}_{\mathcal{E}}$ is the t-structure associated to $\mathcal{E}$ in $D(\mathcal{A})$.

This result and the techniques involved in this constructions apply to different contexts: the study of the relative $\mathrm{D}_{X/S}$-module (see [4]), derived equivalence induced by tilting modules in representation theory (see [3]) and to the so called homological minimal model program.This last application would be the main subject of this seminar.

We will provide an introduction to Bridgeland paper [1] compared with the one of van den Bergh [5] where the authors proved that the bounded derived categories of coherent sheaves of two smooth threefolds Y and Y^{+} related by a flop (on X) are equivalent.

References
[1] T. Bridgeland, *Flops and derived categories*, Invent. Math. **147** (2002), no. 3, 613-632.
[2] L.Fiorot, *n-Quasi-Abelian Categories vs n-Tilting Torsion Pairs*, ArXiv e-prints (2016).
[3] L. Fiorot, F. Mattiello, and M. Saorín, *Derived Equivalences induced by nonclassical tilting objects*, Proc. Amer. Math. Soc. **145** (2017), no.4, 1505-1514.
[4] L. Fiorot, T. Monteiro Fernandes, *t-Structures for relative D-modules and t-exactness of the de Rham functor*, Journal of Algebra **509** (2018), 419-411.
[5] M.van den Bergh, *Three-dimensional flops and noncommutative rings*, Duke Math. J. **122** (2004), no. 3, 423-455.