Advances In Homotopy Theory

Rapport sur les contributions

ID de Contribution: **2**   Type: **Invited research talk**

Resolutions and duality in K(2)-local homotopy theory

lundi 29 juin 2015 11:00 (50 minutes)

Some time ago, Goerss, Henn, Mahowald, and Rezk produced a topological resolution of the K(2)-local sphere at the prime 3. Along with the emergence of topological modular forms, this was one of the events that helped organize our thinking about the entire K(2)-local category. The occasion of this conference seems a good time to revisit these constructions and some of the theorems that followed, both new and old.

Auteur principal: GOERSS, Paul (Northwestern)

Orateur: GOERSS, Paul (Northwestern)

ID de Contribution: **3**   Type: **Invited research talk**

Characterististic classes in TMF_0(3)

lundi 29 juin 2015 15:00 (50 minutes)

We develop a theory of characteristic classes for the cohomology of topological modular forms with \Gamma_0(3)-level structures. These classes are supposed to play an important role in the determination of the string bordism ring. It turns out that the TMF_0(3)-cohomology of BString is freely generated by Pontryagin classes and one extra class which relates to the theory of cubical structures for line bundles on elliptic curves.

Auteur principal: LAURES, Gerd (Bochum)

Orateur: LAURES, Gerd (Bochum)

ID de Contribution: **4**   Type: **Invited research talk**

Around Takayasu's cofiber sequences

mercredi 1 juillet 2015 12:00 (50 minutes)

S. Takaysu introduced certain cofiber sequences which generalize the identification of a stunted infinite projective space with a certain Thom space. These sequences occur within the context of the Arone-Goodwillie tower for
example. We will describe a new construction of these sequences. The construction uses certain properties of Lannes' T functor which will be discussed.

(joint work with Nguyen Dang Ho Hai)

Auteur principal: SCHWARTZ, Lionel (Paris 13)

Orateur: SCHWARTZ, Lionel (Paris 13)

ID de Contribution: **5**   Type: **Invited research talk**

The ring of cooperations for 2-primary tmf

mercredi 1 juillet 2015 11:00 (50 minutes)

This talk represents joint work with Kyle Ormsby, Nat Stapleton, and Vesna Stojanoska.

I will describe 3 different perspective on tmf_*tmf (localized at 2).*
*(1) the E_2-term of the Adams spectral sequence for tmf_*tmf decomposes as a direct sum of ext groups associated to bo-Brown-Gilter modules,
(2) modulo torsion, tmf_*tmf embeds into the ring of 2-variable modular forms, and*
*(3) modulo v_2-torsion, tmf_*tmf embeds into a product of TMF_0(N)_*, for various values of N, and how they are related.

Auteur principal: BEHRENS, Mark (Notre Dame)

Orateur: BEHRENS, Mark (Notre Dame)

ID de Contribution: **6**   Type: **Invited research talk**

Automorphisms of p-completed classifying spaces of groups of Lie type

mardi 30 juin 2015 12:00 (50 minutes)

(See PDF.)

Auteur principal: OLIVER, Bob (Paris 13)

Orateur: OLIVER, Bob (Paris 13)

ID de Contribution: **7** Type: **Invited research talk**

Chromatic Gorenstein descent

mercredi 1 juillet 2015 09:00 (50 minutes)

It is elementary that ku (with coefficients Z[v]) is Gorenstein of shift -3.
It follows that KU (with coefficients Z[v, 1/v]) is Anderson self-dual (with shift one more) and by descent that ko is Gorenstein of shift -5 and KO is Anderson self-dual (of shift one more).

There are a number of similar examples arising from topological modular (tmf(2), tmf(3)) and automorphic forms. The talk will describe the general context, how to predict the change in shifts under descent, and some particular cases (Joint work with Vesna Stojanoska).

Auteur principal: GREENLEES, John (Sheffield)

Orateur: GREENLEES, John (Sheffield)

ID de Contribution: **8**   Type: **Invited research talk**

On some resolutions in the category HV_{fg}-U

mardi 30 juin 2015 16:30 (50 minutes)

See PDF.

Auteur principal: LANNES, Jean (Paris 7)

Orateur: LANNES, Jean (Paris 7)

ID de Contribution: **9**   Type: **Invited research talk**

Invertible modules over higher real K-theory spectra

lundi 29 juin 2015 12:00 (50 minutes)

For a finite subgroup G of the Morava stabilizer group of height n at a prime p, there is an associated ring spectrum EO = $(E_n)^{hG}$ of homotopy fixed points of Morava E-theory E_n under its G-action. The spectra EO carry some tractable information about the K(n)-local sphere. We study their Picard groups, and show that, when n=p-1, Pic(EO) is always cyclic. This is joint work with Drew Heard and Akhil Mathew.

Auteur principal: STOJANOSKA, Vesna (MPI Bonn)

Orateur: STOJANOSKA, Vesna (MPI Bonn)

ID de Contribution: **10**   Type: **Invited research talk**

Calculating with power operations for Morava E-theory at height 2

lundi 29 juin 2015 16:30 (50 minutes)

There is a robust theory of power operations for Morava E-theory. At height 2, this theory is sufficiently robust to allow complete calculations. We provide some examples.

Auteur principal: REZK, Charles (UIUC)

Orateur: REZK, Charles (UIUC)

ID de Contribution: **11**   Type: **Invited research talk**

Group actions on rings and group cohomology

mardi 30 juin 2015 09:00 (50 minutes)

We consider a finite group G acting on a polynomial ring k[V] and try to understand the multiplicity of a given indecomposable kG-summand in terms of commutative algebra. We then try and do the same for cohomology of a group, considering it as a Mackey functor on the subgroups of G.

Auteur principal: SYMONDS, Peter (Manchester)

Orateur: SYMONDS, Peter (Manchester)

ID de Contribution: **12**   Type: **Invited research talk**

Homology of functors from groups to abelian groups

mardi 30 juin 2015 11:00 (50 minutes)

Functor homology (i.e. homological algebra in functor categories) on a suitable category allow us to compute some stable homology of linear groups, orthogonal groups or symplectic groups with twisted coefficients.

Little is known concerning stable homology of automorphism groups of free groups with twisted coefficients. We have cancellation results, several computations in small degree by Satoh and explicit classes constructed by Kawazumi. Homology of functors from groups to abelian groups should help us to better understand stable homology of automorphism groups of free groups with twisted coefficients.

In this talk, I will explain the previous motivation for the study of homology of functors from groups to abelian groups and I will give several results concerning this functor homology.

Auteur principal: VESPA, Christine (Strasbourg)

Orateur: VESPA, Christine (Strasbourg)

ID de Contribution: **13** Type: **Invited research talk**

Descent up to nilpotence in equivariant stable homotopy theory

mardi 30 juin 2015 15:00 (50 minutes)

We will report on joint work (partially in progress) with Akhil Mathew and Justin Noel about descent in an equivariant context. This allows to revisit and extend various classical results of Quillen, Hopkins/Kuhn/Ravenel, and Thomason and leads to a number of interesting questions and conjectures.

Auteur principal: NAUMANN, Niko (Regensburg)

Orateur: NAUMANN, Niko (Regensburg)