Moroccan Research Group in Rational Homotopy Theory
http://algtop.net

Bilan 2013-2014
Horizons 2014-2015

1. Bilan 2013-2014

1.1. Seminars. 8 monthly seminars from October 2013 to May 2014 (two at Meknes, two in Casablanca and four in Rabat) with a regular participation of about 10 participants from Oujda, Sidi Ifni, El Jadida, Meknes, Kenitra, Rabat and Casablanca.

1.2. GeToPhyMa. The meeting is mainly intended for researchers and graduate students in Geometry, Topology and Mathematical Physics. The main goal is to carry to participants the current approaches of mathematicians and physicists for some recent concepts subject of promising research works. The main focus of this research program will be on the interaction between Geometry, Topology and Mathematical Physics. The underlying themes are the use of algebraic topology; it serves as a common language making interaction possible and fruitful between mathematics and physics. The goal of the school is to facilitate broader, and deeper, interaction between researchers from these different fields. To this end, distinguished experts will participate in this program, teaching advanced courses on subjects of current interest. Further activities include communications, posters, discussion sessions and public conferences with specific emphasis on opportunities for young researchers to learn new ideas and techniques.

Our research group organized the 4th-edition (90 registered participants , 4 days courses in moduli and configuration spaces) dedicated in memory of Bill Thurston (1946-2012). Since the edition of 2014, GeToPhyMa will be a GGTM school (GGTM: Groupment for the development of the Geometry and Topology in the Maghreb).

1.3. Scientific Production.

1.3.1. *8 Papers submitted.*
- **Hilali Conjecture**
  (1) Y. Rami, *A new invariant that's a lower bound of LS-category,*
  (2) B. Ben El Krafi, M.R. Hilali, M.I. Mamouni, *On the Hilali conjecture for formal and coformal elliptic space*
  (3) M.R. Hilali, M.I. Mamouni, H. Yamoul, *On the Hilali conjecture for configuration spaces of closed manifolds*
- **Rational homotopy type classification**
  (1) M.R. Hilali, M.I. Mamouni, J. Tarik, *On the rational homotopy type of elliptic space whose cohomological dimension is 9*
  (2) M.R. Hilali, M.I. Mamouni, H. Yamoul, *On the rational homotopy type of elliptic space up to dimension 8*
- **LS-category and its ramification**
  (1) K. Boutahir, Y. Rami, *On L.S.-category of a family of rational elliptic spaces*, arXiv:1310.6247v1 [math.AT]
- **Topological Robotics**
  (1) Y. Derfoufi, Y. Rami, M.I. Mamouni, *Robot motion planning algorithms: Algebraic and topological proprieties, affine approximation.*

2. Horizons 2014-2015

- **Association**: Foundation of an association dedicated to structure and organize the research efforts of our research group
- **Master**: Initiation of an inter-institutions (Casablanca-Rabat-Meknes) Master in algebraic topology (a leader and original experience in Morocco).
- **Seminars**: 8 monthly seminars (from October 2014 to May 2015) with new locations: Oujda and Kenitra.
- **Research School**: Since the 5th-GeToPhyMa is planned for 2016 (a CIMPA-GGTM school on rational homotopy theory celebrating the 80 anniversary of Jim Stashef and in memory of Daniel Quillen (1940-2011)). A local mini-research school is scheduled for June 2015.
- **New research subjects**:
    - H. Aaya, M.R. Hilali, Other weaker versions of the Halperin inequality dim $H^*(X; \mathbb{Q}) \geq P(rk_0(X))$.
    - B. Ben El Krafi, M.I. Mamouni, W. Mansouri, *On the cocategory and nilpotency of homotopy self equivalence.*
    - K. Boutahir, Y. Rami, *On the topological complexity of flag manifolds.*

3. Seminars 2014-2015

	Meknes	Rabat-CRMEF	Rabat-UIR	Rabat-CRMEF	Kenitra	Rabat-UIR	Oujda	Casa
Aaya	x		x		x			
Benlkrafi		x		x		x		
Boutahir	x		x				x	
Derfoufi	x			x			x	
Hilali								x
Mansouri		x	x		x			
Mamouni				x		x	x	x
Rami								x
Yamoul		x			x	x		

SeeYou