

# Conference in honor of Prof. André Haefliger's 90th birthday

May 15-17, 2019 – Auditorium of the Haute Ecole de Gestion  
(Campus Battelle)

## Colloquium Talks – invited Speakers

### Norbert A'Campo (University of Basel)

**Title :**

*Teichmüller space as a leaf*

**Abstract :**

*Let  $S$  be a compact, connected surface of genus  $g \geq 2$ . The space  $J(TS)$  of all smooth fields  $J$  of endomorphism of the tangent space  $TS$  satisfying  $J \circ J = -Id_{TS}$  carries an integrable complex structure  $J \circ$  together with a symplectic functions valued form  $\omega \circ$ . The group  $Diff_0(S)$  acts freely  $\omega \circ$ -symplectic and  $J \circ$ -holomorphic on  $J(TS)$ . The  $Diff_0(S)$  orbits are  $\omega \circ$ -symplectic and the  $\omega \circ$ -orthogonal distribution to the foliation by orbits is integrable too. Its leaves are copies of the so-called Teichmüller space  $Tg$ . In work on progress with Sumio Yamada we deduce from above foliation on  $J(TS)$  by copies of Teichmüller space new insight concerning Teichmüller and Weil-Petersson geodesics.*

### Augustin BANYAGA (Pennsylvania State University)

**Title :**

*On twisted Morse Complexes (Joint work with David Hurtubise and Peter Spaeth)*

**Abstract :**

*We construct the twisted Morse-Smale-Witten complex with local coefficients in a bundle of abelian groups  $G$  a smooth manifold  $M$ . We outline the proof that the homology of this complex is isomorphic to the homology of Steenrod's CW chain complex' which is known to be the singular homology of  $M$  with local coefficients  $G$ . We exhibit the connection with the Lichnerowicz cohomology*

### Martin BRIDSON (Oxford University)

**Title :**

*3-manifolds, cubical complexes, and the recognition of finite-sheeted coverings*

**Abstract :**

*In this talk I shall discuss two sets of related problems. The first concerns the difficulty of identifying what the finite-sheeted coverings of a compact non-positively curved cube complex are, and the second concerns the difficulty of distinguishing 3-manifolds using the finite quotients of their fundamental groups.*

### Marius CRAINIC (Utrecht University)

**Title : TBA**

**Abstract : TBA**

### Yakov ELIASHBERG (Stanford University)

**Title :**

*The world of flexible Weinstein manifolds*

**Abstract :**

*The notion of flexibility for Weinstein manifolds, which was introduced several years ago by K. Cieliebak and the speaker, turned out to be very fruitful for understanding symplectic topology of Weinstein manifolds. In the talk I will discuss some old and new results (mainly by O. Lazarev), as well as open questions.*

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### Etienne GHYS (Berkeley University of California)

**Title :** TBA

**Abstract :** TBA

### Vaughan JONES (Vanderbilt University)

**Title :**

*The state of the art in subfactor classification*

**Abstract :**

*Subfactors are concrete expressions of unitary quantum symmetries, thus including finite and compact groups and their quantum versions. A subfactor has an index and one way to organise them is to use the index as a measure of complexity. Although there are many open questions in general, there is a family of subfactors which are completely classified (though far from “understood”) up to index 6.25. This is the result of the work of many people, and extensive computer calculations.*

### Lucy MOSER-JAUSLIN (University of Burgundy)

**Title :**

*Smooth rational varieties with infinitely many real forms*

**Abstract :**

*In this talk, I will discuss joint work with A. Dubouloz and G. Freudenburg. Given a real variety  $X$ , a real form of  $X$  is a real variety  $Y$  such that the complexifications of  $X$  and  $Y$  are isomorphic as complex varieties. We will show how to construct smooth rational affine algebraic varieties of dimension 4 or higher which admit infinitely many non-isomorphic real forms.*

### Christophe PITTET (Aix-Marseille University)

**Title :**

*Bounded characteristic classes and flat bundles*

**Abstract :**

*We will discuss a generalization of a theorem of Gromov about the boundedness of characteristic classes of Lie groups.*

### Takahashi TSUBOI

**Title :**

*On the group of real analytic diffeomorphisms*

**Abstract :**

*We review a result by Herman which says that the identity component of the group of real analytic diffeomorphisms of the  $n$ -dimensional torus is a simple group. Then we discuss the perfectness of the identity component of the group of real analytic diffeomorphisms of the manifold which admits nontrivial circle actions and explain several known results. If time allows, we also talk about other problems on the group of real analytic diffeomorphisms.*

