Master Class on

"Higher Structures Emerging from Renormalisation"

November 8, - 19, 2021

organized by

Pierre Clavier (U of Haut-Alsace), Kurusch Ebrahimi-Fard (NTNU, Trondheim), Peter K. Friz (TU Berlin), Harald Grosse (U Vienna), Dominique Manchon (U Clerment Auvergne), Sylvie Paycha (U of Potsdam), Sylke Pfeiffer (U of Potsdam)

- **Monday, November 8th, 2021**

  08:30 – 09:00 **Registration & Opening**

  09:00 – 10:00 **Lecture K. Rejzner 1**
  Renormalization in perturbative algebraic quantum field theory

  10:15 – 11:15 **Lecture F. Patras 1**
  Renormalization à la Wick

  11:15 – 11:45 **Coffee/Tea Break**

  11:45 – 12:45 **Lecture F. Patras 2**
  Renormalization à la Wick

  12:45 – 14:15 **Lunch Break**

  14:15 – 14:40 **Short communication 1 David Prinz (HU Berlin)**
  Hopf Ideals for General Relativity

  14:50 – 15:15 **Short communication 2 Victor Nador (U Bordeaux)**
  Double scaling limit of the quartic $O(N)^3$-tensor model

  15:25 – 15:50 **Short communication 3 Rosa Preiß (TU Berlin)**
  Adding rough paths: no problem as long as they are smooth

  16:00 – 16:25 **Short communication 4 Albin Grataloup (U Montpellier)**
  A derived geometric perspective on the BV complex.

- **Tuesday, November 9th, 2021**

  09:00 – 10:00 **Lecture F. Patras 3**
  Renormalization à la Wick

  10:15 – 11:15 **Lecture K. Rejzner 2**
  Renormalization in perturbative algebraic quantum field theory

  11:15 – 11:45 **Coffee/Tea Break**

  11:45 – 12:45 **Lecture K. Rejzner 3**
  Renormalization in perturbative algebraic quantum field theory

  12:45 – 14:15 **Lunch Break**

  14:15 – 15:15 **Lecture F. Patras 4**
  Renormalization à la Wick

15:30 – 15:55 **Short communication 5 Adrián Celestino Rodriguez (NTNU, Trondheim)**
Relations between cumulants from Magnus &expansion

16:05 – 16:30 **Short communication 6 Nicolas Gilliers (NTNU, Trondheim)**
Post-Lie algebras and operator-valued Dykema's T-transform in Free Probability

- **Wednesday, November 10th, 2021**

09:00 – 10:00 **Lecture I. Chevyrev 1**
Hopf and pre-Lie algebras in regularity structures

10:15 – 11:15 **Lecture L. Zambotti 1**
Analytic aspects of regularity structures

11:15 – 11:45 **Coffee/Tea Break**

11:45 – 12:45 **Lecture L. Zambotti 2**
Analytic aspects of regularity structures

12:45 – 14:15 **Lunch Break**

14:15 – 14:40 **Short communication 7 Adrien Laurent (U of Bergen)**
Exotic aromatic B-series for the long time integration of ergodic stochastic differential equations

14:50 – 15:15 **Short communication 8 Ludwig Rahm (NTNU, Trondheim)**
Substitution in Lie-Butcher Series

19:30 – **School dinner**

- **Thursday, November 11th, 2021**

09:00 – 10:00 **Lecture L. Zambotti 3**
Analytic aspects of regularity structures

10:15 – 11:15 **Lecture I. Chevyrev 2**
Hopf and pre-Lie algebras in regularity structures

11:15 – 11:45 **Coffee/Tea Break**

11:45 – 12:45 **Lecture I. Chevyrev 3**
Hopf and pre-Lie algebras in regularity structures

12:45 – 14:15 **Lunch Break**

14:15 – 14:40 **Short communication 9 Pablo Linares (MPI Leipzig)**
A multiindex-based regularity structure for quasilinear SPDEs

14:50 – 15:15 **Short communication 10 Pawel Duch (Adam Mickiewicz University in Poznan)**
Flow equation approach to singular stochastic PDEs

15:25 – 15:50 **Short communication 11 Eugenia Boffo (Charles U, Prague)**
BRST of the N=2 superparticle and R-R fields

16:00 – 16:25 **Short communication 12 Yannic Vargas (U of Potsdam)**
New formulas for cumulant-to-moment relations

- **Friday, November 12th, 2021**

09:00 – 10:00 **Lecture I. Chevyrev 4**
Hopf and pre-Lie algebras in regularity structures

10:15 – 11:15 **Lecture K. Rejzner 4**
Renormalization in perturbative algebraic quantum field theory

11:15 – 11:45 **Coffee/Tea Break**

11:45 – 12:45 **Lecture L. Zambotti 4**
Analytic aspects of regularity structures

12:45 – 14:15 **Lunch Break**

14:15 – 14:40 **Short communication 13 Diego Lopez Valenci (U of Potsdam)**
Pole Structure of Shintani zeta functions and Newton Polytopes.

14:50 – 15:15 **Short communication 14 Toni Kodžoman (Institut Ruđer Bošković)**
On Hopf and L_∞Algebras

15:25 – 15:50 **Short communication 15 Carlo Bellingeri (TU Berlin)**
A geometric approach to renormalisation on "smooth rough paths"

All talks take place at the Erwin Schrödinger Institute - Boltzmann lecture hall! The master class can be followed online via the following that can be found on the website: https://www.esi.ac.at/events/e416/