

Programme on
“Bivariant K-theory in Geometry and Physics”

November 5 - 30, 2018

organized by

Alan Carey (ANU, Canberra), Harald Grosse (U Vienna), Bram Mesland (U Bonn), Adam Rennie
(U Wollongong), Walter van Suijlekom (Radboud U Nijmegen)

Masterclass

November 19 – 23, 2018

• **Monday, November 19, 2018**

09:00 – 09:30 **Registration**

09:30 – 10:30 **Bram Mesland / Adam Rennie**

Introduction to operator algebras and KK-theory. (I)

10:30 – 11:00 *Coffee / Tea Break*

11:00 – 12:00 **Bram Mesland / Adam Rennie**

Introduction to operator algebras and KK-theory. (II)

12:00 – 14:00 *Lunch Break*

14:00 – 15:00 **Chris Bourne**

Topological phases, index theory and Kasparov theory. (I)

15:00 – 15:30 *Coffee / Tea Break*

15:30 – 16:30 **Discussion/Questions**

• **Tuesday, November 20, 2018**

09:30 – 10:30 **Bram Mesland / Adam Rennie**

Introduction to operator algebras and KK-theory. (III)

10:30 – 11:00 *Coffee / Tea Break*

11:00 – 12:00 **Discussion/Questions**

12:00 – 14:00 *Lunch Break*

14:00 – 15:00 **Chris Bourne**

Topological phases, index theory and Kasparov theory. (II)

15:00 – 15:30 *Coffee / Tea Break*

15:30 – 16:30 **Emil Prodan**

Physics and applications of topological phases: How KK-theory can help? (I)

16:30 – 17:00 **Discussion/Questions**

- **Wednesday, November 21, 2018**

09:30 – 10:30 **Jens Kaad**

Recent advances in (unbounded) KK-theory. (I)

10:30 – 11:00 *Coffee / Tea Break*

11:00 – 12:00 **Chris Bourne**

Topological phases, index theory and Kasparov theory. (III)

12:00 – 15:00 *Lunch Break*

15:00 – 16:00 **Nigel Higson**

A rapid tour through noncommutative geometry: from integral equations and the spectral theorem to the index theorem and beyond

- **Thursday, November 22, 2018**

09:30 – 10:30 **Jens Kaad**

Recent advances in (unbounded) KK-theory. (II)

10:30 – 11:00 *Coffee / Tea Break*

11:00 – 12:00 **Discussion/Questions**

12:00 – 14:00 *Lunch Break*

14:00 – 15:00 **Koen van den Dungen**

Towards noncommutative Lorentzian geometry. (I)

15:00 – 15:30 *Coffee / Tea Break*

15:30 – 16:30 **Emil Prodan**

Physics and applications of topological phases: How KK-theory can help? (II)

16:30 – 17:00 **Discussion/Questions**

- **Friday, November 23, 2018**

09:30 – 10:30 **Jens Kaad**

Recent advances in (unbounded) KK-theory. (III)

10:30 – 11:00 *Coffee / Tea Break*

11:00 – 12:00 **Emil Prodan**

Physics and applications of topological phases: How KK-theory can help? (III)

12:00 – 14:00 *Lunch Break*

14:00 – 15:00 **Koen van den Dungen**

Towards noncommutative Lorentzian geometry. (II)

15:00 – 15:30 *Coffee / Tea Break*

All talks take place at ESI, Boltzmann Lecture Hall!