K-theory for C*-algebras, and beyond

Welcome !

Presentation: Name: Serge Richard (リシャール セルジュ)

Origin: Switzerland

Mother tongue: French

Education: Lausanne and Geneva (Switzerland)

Research and teaching experiences: Several years in Lyon (France)
2 years in Cambridge (United Kingdom)
2 years in Tsukuba (Japan)
18 months in Nagoya

Aim of these lectures: Present recent techniques in functional analysis and in operator algebras

Introduce a path to non-commutative geometry

Show some interdisciplinary applications, and the unity of mathematics

K-theory for C*-algebras, and beyond

Plan of the course (tentative)

1) C*-algebras

2) Projections and unitaries

3) K_0 and its properties

4) K_1 and its properties

5) Index map and Bott periodicity

6) The six-term exact sequence

7) Cyclic cohomology

8) Connes' pairing

9) Applications

K-theory for C*-algebras, and beyond

Big challenges: Lots of material

Many interconnections to be explained

Barrier of language

→ **Lecture notes available**

(corrections and comments are most welcome)

but valuable experience !

Evaluation: *Grades based on attendance, written reports, and discussions*

Attendance at most of the lectures

Additional proofs, Exercises or Extensions
(will be added on the website of the course)

After the class
or
at Café David

Feel free to contact me at any time: **richard@math.nagoya-u.ac.jp** and **Rm. 237 in Sci. Bldg. A**

More updated information on

http://www.math.nagoya-u.ac.jp/~richard/Ktheorie.html