

**Introductory Workshop of the  
Thematic Programme on  
“Spectral Theory and Mathematical Relativity”  
June 19 - 23, 2023**

**organized by**

**Piotr T. Chruściel (U of Vienna), Peter Hintz (ETH Zurich), Alexander Strohmaier (U Leeds)**

- **Monday, June 19th, 2023**

09:30 – 10:00 **Registration & Welcome**

10:00 – 10:30 **Coffee break**

10:30 – 11:30 **Birgit Schoerhuber (U of Innsbruck)**

*Singularity formation, stability and spectral analysis I*

11:30 – 13:30 **Lunch break**

13:30 – 14:30 **Maciej Zworski (UC, Berkeley)**

*Microlocal methods for operators with analytic coefficients I: FBI transforms, inversion formulas and analytic wave front sets*

14:30 – 15:00 **Coffee break**

15:30 – 16:30 **Birgit Schoerhuber (U of Innsbruck)**

*Singularity formation, stability and spectral analysis II*

16:30 – 17:00 **Discussions**

- **Tuesday, June 20th, 2023**

09:00 – 10:00 **Birgit Schoerhuber (U of Innsbruck)**

*Singularity formation, stability and spectral analysis III*

10:00 – 10:30 **Coffee break**

10:30 – 11:30 **Alexander Strohmaier (U Leeds)**

*Spectral theory of stationary spacetimes I: Normally hyperbolic operators on spacetimes and solution theory*

11:30 – 13:00 **Lunch break**

13:00 – 14:00 **Birgit Schoerhuber (U of Innsbruck)**

*Singularity formation, stability and spectral analysis IV*

14:00 – 14:30 **Coffee break**

14:30 – 15:30 **Maciej Zworski (UC, Berkeley)**

*Microlocal methods for operators with analytic coefficients II: Microlocal elliptic regularity*

15:30 – 17:00 **Discussions**

- **Wednesday, June 21st, 2023**

09:00 – 10:00 **Dietrich Häfner**

*Dirac fields on Kerr spacetime I: The Kerr spacetime*

10:00 – 10:30 **Coffee break**

10:30 – 11:30 **Alexander Strohmaier (U Leeds)**

*Spectral theory of stationary spacetimes II: Fourier integral operators and microlocal theory*

11:30 – 14:00 **Lunch break**

14:00 – 17:00 **Free afternoon & discussions**

18:00 – 22:00 **Workshop Dinner**

- **Thursday, June 22nd, 2023**

09:00 – 10:00 **Maciej Zworski (UC, Berkeley)**

*Microlocal methods for operators with analytic coefficients III: Kashiwara's watermelon theorem*

10:00 – 10:30 **Coffee break**

10:30 – 11:30 **Dietrich Häfner**

*Dirac fields on Kerr spacetime II: Scattering theory*

11:30 – 13:30 **Lunch break**

13:30 – 14:30 **Alexander Strohmaier (U Leeds)**

*Spectral theory of stationary spacetimes III: Trace formulas*

14:30 – 15:00 **Coffee break**

15:00 – 16:00 **Dietrich Häfner**

*Dirac fields on Kerr spacetime III: The Unruh state for fermions*

16:00 – 17:00 **Discussions**

- **Friday, June 23rd, 2023**

09:00 – 10:00 **Alexander Strohmaier (U Leeds)**

*Spectral theory of stationary spacetimes IV: Spectral asymptotics*

10:00 – 10:30 **Coffee break**

10:30 – 11:30 **Maciej Zworski (UC, Berkeley)**

*Microlocal methods for operators with analytic coefficients IV: Applications to unique continuation*

11:30 – 13:30 **Lunch break**

13:30 – 14:30 **Dietrich Häfner**

*Dirac fields on Kerr spacetime IV: The Hawking effect*

**All talks take place at ESI Boltzmann Lecture Hall!**