

You are kindly invited to attend the public defence of the  
doctoral dissertation of

**Yiyang Luo**

Tuesday, 5 December 2023, at 10 A.M. (Brussels time)  
UGent, Campus Sterre, Krijgslaan 281, 9000 Ghent  
Lecture room 2.1 at S8 building

Online livestream: <https://ap.lc/eWOHV>

After the defense, you are welcome to attend the reception.  
Please confirm your in person attendance before 4th  
December by email: [yiyang.luo@ugent.be](mailto:yiyang.luo@ugent.be)



## DISTURBANCES IN THE IONOSPHERE: THE “EARLY BIRD” OF HIGH-ENERGY NATURAL HAZARD EVENTS

Scientific research on multi-instruments  
detection of the ionosphere under different  
types of high-energy natural hazard events



## SUMMARY:

The research examined observations of ionospheric disturbances resulting from various high-energy natural hazard events, including space storms, meteoroid intrusions, explosions, earthquakes, and typhoons, using different instruments. The study highlights the substantial challenge of distinguishing ionospheric disturbance signatures arising from different high-energy natural disasters. Atmospheric gravity waves play a crucial role in transmitting these disturbances, and the corresponding periods of these waves vary significantly across different high-energy natural disaster events. The study emphasizes equipment limitations. Moreover, it visually portrays the propagation of high-frequency radio waves influenced by high-energy natural disaster events, offering valuable new insights from both radio science and geography perspectives.

## About the Author

Yiyang was born in 1995 in a picturesque city in Shanxi province, China, renowned for its delectable noodles and desserts. From 2012 to 2018, he finished a major in Radio Engineering (i.e., Computer Science). Starting in October 2018, Yiyang embarked on his doctoral journey at V.N. Karazin Kharkiv National University, specializing in theoretical Radio Physics, and, since 2019, contributing to Space Radio Physics. In June 2022, Yiyang continued his academic study at Ghent University (UGent), focusing on Geography. Beyond academic endeavors, Yiyang has a passion for cooking, music, films, reading articles, and surfing the internet.

## Supervisors:

- Prof. Dr. **Leonid Chernogor** (UKharkiv);
- Prof. Dr. **Sergey Shulga** (UKharkiv);
- Prof. Dr. **Kwinten Van Weverberg** (UGent);
- Prof. Dr. **Frank Witlox** (UGent);
- Prof. Dr. **Isabel Van Driessche** (UGent).

## Examination Committee:

- Prof. **Haosheng Huang** (Chair, WE12 UGent);
- Dr. **Tobias G.W. Verhulst** (Royal Meteorological institute of Belgium);
- Prof. **Piet Termonia** (WE05 UGent);
- Prof. **Alain De Wulf** (WE12 UGent);
- Prof. dr. **Giovanni Lapenta** (Katholieke Universiteit Leuven)
- em. Prof. **Philippe De Maeyer** (WE12);
- Dr. **Edmund Henley** (Met Office of UK).