

INFORMATION ON DOCTORAL DISSERTATION

Title of the thesis:

**Performance Improvement Methods of Millimeter - Wave Radio over Fiber Systems
for Broadband Radio Access Networks.**

Specified field of study: Telecommunications Engineering

Code of specialty: 9.52.02.08

Name of the PhD candidate: **Phạm Anh Thu**

Name of the research supervisors:

1. Vũ Tuấn Lâm, Ph.D.

2. Đặng Thế Ngọc, Ph.D, Associate Professor.

Academic Institution: Posts and Telecommunications Institute of Technology

THE SCIENTIFIC CONTRIBUTIONS

The scientific contributions of the thesis are summarized as follows:

1. Development of an analytical model to evaluate the performance of the MMW-RoF systems considering simultaneous impacts of RoF and MMW subsystems.
2. Proposal of a hybrid solution using spatial multiplexing in the optical fiber and spatial diversity in the radio links to improve the performance of the MMW-RoF systems.
3. Proposal of a novel solution that exploits network coding to enhance the performance of bidirectional MMW-RoF systems.

ON PRACTICAL APPLICABILITY AND FURTHER STUDIES

The thesis's results and outcomes on the new theoretical and analytical models for evaluating the performance of MMW-RoF systems and the performance improvement methods can be considered as useful information to further develop and realize practical and efficient MMW-RoF systems for next generation radio access networks. In addition, the research results and the literature information presented in the thesis can be used for teaching and for further research on the related subjects/majors in universities.

Research supervisors

PhD candidate

Vũ Tuấn Lâm, Ph.D.

Đặng Thế Ngọc, Ph.D, Associate Professor.

Phạm Anh Thu