MAXIMAL REGULARITY FOR LOCAL MINIMIZERS OF NON-AUTONOMOUS FUNCTIONALS

JIHOON OK

ABSTRACT. Establishment of regularity theory for partial differential equations and variational problems with (p,q)-growth condition has been an open issue since the 1980s. In this talk we introduce recent results of $C^{1,\alpha}$-regularity for some $\alpha \in (0,1)$ and C^α-regularity for any $\alpha \in (0,1)$ of local minimizers of the functional

$$v \;\mapsto\; \int_\Omega \varphi(x, |Dv|)\,dx,$$

where φ satisfies a (p,q)-growth condition and sharp regularity conditions. In addition, we introduce regularity results for bounded or Hölder continuous minimizers of the above functional, or weak solutions of PDEs with a generalized Orlicz growth condition.

This is a joint work with Peter Hästö at University of Turku.

REFERENCES

1. P. Hästö and J. Ok: *Maximal regularity for local minimizers of non-autonomous functionals*, J. Eur. Math. Soc., to appear. ArXiv:1902.00261

DEPARTMENT OF MATHEMATICS, SOGANG UNIVERSITY, SEOUL 04107, REPUBLIC OF KOREA
Email address: jihoonok@sogang.ac.kr