

15.03.2021

**Monday's Nonstandard Seminar 2020/21**

**15:00**

Author: Samuele Riccò (University of Modena and Reggio Emilia)

Title: **Regularity for obstacle problems without structure conditions**

Abstract: The aim of this seminar is to deal with the possible occurrence of the Lavrentiev phenomenon on a variational obstacle problems with  $p, q$ -growth, when dealing with the Lipschitz continuity of solutions. In order to overcome this problem the availment of the notions of relaxed functional and Lavrentiev gap are needed. The main tool used here is a fundamental Lemma which reveals to be crucial because it allows us to move from the variational obstacle problem to the relaxed-functional-related one. This is fundamental in order to find the solutions' regularity that we intended to study. We assume the same Sobolev regularity both for the gradient of the obstacle and for the coefficients. This is a joint project in collaboration with Dr. Giacomo Bertazzoni (University of Modena and Reggio Emilia) and the purpose is to extend the results obtain in the paper by M. Eleuteri, P. Marcellini, E. Mascolo, *Advances in Calculus of Variations* (2020).