IMBM Model Theory Meetings

11.15-12.45: Piotr Kowalski (Uniwersytet Wrocławski) *Some Model Theory of Galois Actions*
This is joint work with Özlem Beyarslan. For a fixed finitely generated group G, we consider actions of G by field automorphisms. If the theory of such generic actions is first-order axiomatizable, then we say that $G - TCF$ exists. It is well-known that $G - TCF$ exists if G is a free group (the theory $ACFA_n$), and it is also known that $G - TCF$ exists for a finite G. On the other hand, it is also known that $(Z \times Z) - TCF$ does not exist. We conjecture that if G is virtually free, then $G - TCF$ exists. So far, we have been able to show it only in the case of a split group G. Using the results of Chatzidakis and Hoffmann, we can also say for which G the theory $G - TCF$ is simple.

14.15-15.45: Derya Çıray (Universität Konstanz) *Mild Parametrization in O-Minimal Structures*
Mild parametrizations, which are parametrizations with some control on the derivatives, were first applied in the realm of diophantine geometry by J. Pila, to obtain results about the density of rational points on the graphs of non-algebraic Pfaffian functions. Furthermore he has shown that obtaining mild parametrization results with some uniformity in parameters would be sufficient to establish Wilkie's conjecture. In this talk I will describe interactions between o-minimal structures and mild parametrizations and discuss whether definable sets of certain o-minimal expansions of the reals admit mild parametrization or not.

16.15-17.45: Haydar Göral (Koç Üniversitesi) *Lehmer's Problem via Model Theory*
We first define the height function and the Mahler measure on the field of algebraic numbers. The height function measures the arithmetic complexity of an algebraic number and it has some nice properties. We study the field of algebraic numbers with elements of small height. We show that this theory is not simple and has the independence property, in other words it is very complicated in the sense of model theory. We also relate the simplicity of a certain pair with Lehmer's conjecture and we discuss the possible independence relation on this pair.

Date : Friday, April 7, 2017
Place : IMBM Seminar Room, Boğaziçi University South Campus