CMUP
Centro de **Matemática**
Universidade do Porto

Dynamical Systems Seminar

Date. March 7th, 14h30 (Friday)

Place. Room FC1.031

Speaker. Alexandre Trilles (Institute of Mathematics, Jagiellonian University in Kraków)

Title. The vague specification is weaker than most specification-like properties

Abstract.

The specification property, introduced in the 1970s by Bowen in the study of Axiom A diffeomorphisms, is a fundamental tool in dynamical systems and it is closely related to chaotic behavior and rich ergodic properties. Although important classes of systems have the specification property, several relevant classes of systems do not have it, and therefore, weaker notions we introduced, such as the weak and almost specification properties. The relations between various generalizations of the specification property in the sense of Bowen have been extensively studied, especially since the 2010s, with works by Kulczycki, Kwietniak, Łącka, Oprocha, Rams, and other authors.

The specification property and its variants are powerful tools in ergodic theory and have been widely used, for example, to prove existence and uniqueness measures of maximal entropy, density of ergodic measures, and existence of generic points for invariant, but not necessarily ergodic measures. Recently, Downarowicz and Weiss used the weak specification property to prove results about lifting generic points. Similar results were obtained 45 years ago by Kamae under the assumption of a less explored variant of the specification property, called the vague specification property, that he introduced in the same work. This motivated the question posed at the end of Downarowicz and Weiss' work about what is the relationship between the weak and the vague specification properties.

We will see that the weak specification property implies the vague specification property, but the converse does not hold. This follows from our main result, which establishes the equivalence of the asymptotic average shadowing and the vague specification properties. As a consequence of this result, we also obtain that the vague specification is weaker than most of the variants of the specification property introduced so far. This is a joint work with Melih Emin Can.