# ABSTRACT
# On automorphisms of Fraïssé-limits

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In this thesis, we examine automorphisms of countable relational structures. Our interest lies in countable structures for which any isomorphisms between substructures extends to an automorphism of the whole structure. Such structures are called homogeneous structures, and the class of finite substructures of a homogeneous structure is called a Fraïssé-class.

Fraïssé-classes can be characterized with three properties; each Fraïssé-class has a corresponding homogeneous structure, unique up to isomorphism, which is defined to be the Fraïssé-limit of the class. We recall the notion of genericity among automorphisms of countable structures and investigate what kind of generic automorphisms are there in the automorphism groups of Fraïssé-limits.

First, we prepare our environment for the notion of genericity. For this, we show a topology on the automorphism group of countable structure, which is a Polish space, thus gaining a Polish group for which the Baire category theorem holds. Then we define an automorphism to be generic if its conjugacy class is dense in this Polish space.

Fraïssé's construction will show us, that any structure having the hereditary, joint-embedding, and amalgamation properties that has only countably many isomorphism types is a Fraïssé-class. We will show a property, called uniform join-embedding property and we will see that if a Fraïssé-class has this property, then there is a generic automorphism of its Fraïssé-limit whose orbits are finite.

The class of finite graphs and the class of finite tournaments are Fraïssé-classes which satisfy the uniform joint-embedding property. In the case of tournaments, we will show a topological approach which is applicable for any Fraïssé-class. We will gather all properties of automorphism which would ruin the genericity in nowhere dense sets, then using the Baire category theorem we will gain generic elements. As one of our main results we show with this method in the calss of finite tournaments that there is a generic automorphism of its Fraïssé-limit whose orbits are finite.

Herwig's theorem states that if we consider a finite relational structure and finitely many partial isomorphism on the structure, that is isomorphisms between substructures, then there is a finite relational structure extending the considered one, and automorphism of the gained structure extending the partial isomorphisms. As our other result, we will show that this is still true, if we stipulate that both structures need to be tournaments. While seeing this, we will understand how efficient is our approach. We will consider finite graphs which can be completed to tournaments with additional edges. The class of such structures is a Fraïssé-class. We will find automorphism of its Fraïssé-limit with the help of Herwig's theorem which will enable us to find the required automorphisms in the analogue of Herwig's theorem.