Potential PhD project in Mathematics Radboud University

**Supervisor:** Arne Smeets

**Title project:** Interpolating between rational and integral solutions

**Description**
In the study of Diophantine equations, given by systems of polynomials with coefficients in a number field, one traditionally distinguishes two cases: the search for rational solutions, and the hunt for integral solutions. Geometrically, these two cases correspond to the study of rational points on projective varieties and of integral points on quasi-projective varieties respectively. While this classical dichotomy is both natural and useful, it also makes a lot of sense to try to interpolate between these two classical notions. A geometric framework in which this becomes possible is provided by Campana's theory of "orbifold pairs", leading to the intermediate notion of "orbifold integral points". The goal of this project is to explore a number of qualitative and quantitative properties of these types of points, together with applications to some classical Diophantine problems.

**Name/Contact of any collaborator(s):**