Classification of algebraic tangles

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In 1970 John Conway created a notion of a "tangle". Tangles can be seen as a building blocks of knots and are a basis of knot tabulation. Using tangles Conway managed to tabulate all links up to 10 crossings, and all knots up to 11 crossings. Moreover, he found a bijection relation between rational numbers and a subclass of tangles called "rational tangles", thus fully classifying this set of tangles. Since then no major development in a theory of tangles happened.

54 years later we extended Conway work and classified all algebraic tangles up to 14 crossings. This was possible by extending the Conway's notation, finding a unique "canonical representation" for every algebraic tangles, and creating an algorithm which relates algebraic tangles to their canonical representation.

During the seminar I will show basis of tangle theory and present some of our results.