1015-57-33 **Carlo Petronio*** (`petronio@dm.unipi.it`), Dipartimento di Matematica Applicata, Università di Pisa, Via Bonanno Pisano 25/B, I-56126 Pisa, Italy. *Exceptional Dehn fillings of hyperbolic 3-manifolds.*

This talk describes the results of a joint paper with Bruno Martelli. We classify all the non-hyperbolic Dehn fillings of the complement of the chain-link with 3 components, conjectured to be the smallest hyperbolic 3-manifold with 3 cusps. We deduce the classification of all non-hyperbolic Dehn fillings of infinitely many 1-cusped and 2-cusped hyperbolic manifolds, including most of those with smallest known volume.

Among other consequences of this classification, we mention the following:

- For every integer n we can prove that there are infinitely many hyperbolic knots in S^3 having exceptional surgeries $\{n, n+1, n+2, n+3\}$, with $n+1, n+2$ giving small Seifert manifolds and $n, n+3$ giving toroidal manifolds;

- We exhibit a 2-cusped hyperbolic manifold that contains a pair of inequivalent knots having homeomorphic complements;

- We exhibit a chiral 3-manifold containing a pair of inequivalent hyperbolic knots with orientation-preservingly homeomorphic complements;

- We give explicit lower bounds for the maximal distance between small Seifert fillings and any other kind of exceptional filling.

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