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Title:	Extended complexity of 3-manifolds
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Abstract: Any compact 3-manifold M has a complexity c(M), which is a nonnegative integer number and which is defined as the number of true vertices of a minimal almost simple spine P of M. The complexity has many good properties. In particular, it behave well with respect to cutting M along surfaces. Namely, if  $M_F$  is obtained from M by cutting along an incompressible surface  $F \subset M$ , then  $c(M_F) \leq c(M)$ . However, this useful property has a shortcoming: the inequality is not strong. So we cannot use it for inductive proofs. We improve that by defining extended complexity  $\bar{c}(M)$ . It is not a number anymore, but a finite tuple of nonnegative integers. The tuples are considered in lexicographical ordering. We prove that if F is essential, then  $\bar{c}(M_F) < \bar{c}(M)$ . We apply the extended complexity for proving the algorithmic classification theorem for Haken 3-manifolds.