

**Basic commutators in weights six and seven as relators**

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## ABSTRACT

Charles Sims has asked whether or not the lower central subgroup  $\gamma_n(F)$  of a free group  $F$  coincides with the normal closure in  $F$  of the basic commutators of weight  $n$ . This question has a positive answer in weights at most 5, but remains an open question in general. In earlier work with Gaglione and Spellman, it was shown that  $\gamma_n(F)$  is the normal closure in  $F$  of the basic commutators of weights  $n$  through  $2n - 4$ . Here, we specialize to the case where  $F$  has rank 2 and outline a proof that  $\gamma_6(F)$  is the normal closure in  $F$  of the basic commutators of weights 6 and 7.

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