

UNDERSTANDING $B\Sigma_1 + \text{exp}$ VIA WKL_0^*

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The theory of Σ_1 -*collection* ($B\Sigma_1$) is the subject of many important open questions in arithmetic. These questions are usually more tractable when the axiom exp asserting the totality of exponentiation is added to the theory. Nevertheless, the arguments involved remain mostly rather technical. We show that all these technicalities can be wrapped up into *one* black box, namely, the Simpson–Smith conservation theorem between $\Sigma_1 + \text{exp}$ and WKL_0^* (Ann. Pure Appl. Logic **31** pp. 289–306), modulo which other arguments become conceptually much more transparent.

This research is joint with Ali Enayat (Gothenburg).