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Bruce Wallace Westbury* (bruce.westbury@utdallas.edu), **Yi Zhang**, **Alin Bostan** and **Jordan Tirrell**. *Exceptional group G_2 and set partitions*.

The sequence A059710 in the OEIS first arose as the multiplicities of the trivial representation in the tensor powers of the seven dimensional irreducible representation of the exceptional Lie group G_2 . I will show that the binomial transform of this sequence is the sequence A108307. This sequence originally arose as enumerating set partitions with no enhanced 3-crossing. This reveals an unexpected connection between the invariant theory of G_2 and set partitions. This connection gives access to a proof of a recurrence relation for A059710, originally conjectured by Mihailovs'. Finally, I will present a closed formula for the generating function of A059710 in terms of hypergeometric functions. This is joint work with A. Bostan, J. Tirrell and Y. Zhang. (Received September 06, 2019)