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ADDITIVE PARTITIONS I

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David Silverman in July 1976 found the following property of the Fibonacci Numbers. This Theorem I was subsequently proved by Ron Evans, Harry L. Nelson, David Silverman, and Krishnaswami Alladi with myself, all independently.

Theorem I. The Fibonacci Numbers uniquely split the positive integers, N , into two sets A_0 and A_1 such that

$$\begin{aligned} A_0 \cup A_1 &= N \\ A_0 \cap A_1 &= \phi \end{aligned}$$

and so that no two members of A_0 nor two members of A_1 add up to a Fibonacci number.

Theorem. (Hoggatt) Every positive integer $n \neq F_k$ is the sum of two members of A_0 or the sum of two members of A_1 .

Theorem. (Hoggatt) Using the basic ideas above the Fibonacci Numbers uniquely split the Fibonacci Numbers, the Lucas Numbers uniquely split the Lucas Numbers and uniquely split the Fibonacci Numbers, and $\{5F\}_{n=2}^{\infty}$ uniquely splits the Lucas Sequence.
