Is Every Prime Sum Graph Hamiltonian?

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A consequence of Bertrand's postulate, proved by L. Greenfield and S. Greenfield in 1998, assures that the set of integers $\{1, 2, \cdots, 2n\}$ can be partitioned into pairs so that the sum of each pair is a prime number for any positive integer n. A prime sum graph is defined by treating each integer as a vertex and two vertices is adjacent if and only if their sum is a prime number. I will introduce some partial results on Filz's conjecture, i.e., every prime sum graph is Hamiltonian. This talk is based on a joint work with Hung-Lin Fu and Jun-Yi Guo.