1116-05-2160   **Axel Brandt**, **Michael Ferrara**, **Mohit Kumbhat**, **Sarah Loeb*** (`sloeb2@illinois.edu`),
                              Derrick Stolee and **Matthew Yancey**. *I, F-partitions of sparse graphs.*

A *star k-coloring* is a proper k-coloring such that the union of two color classes induces a star forest. While every planar graph is 4-colorable, not every planar graph is star 4-colorable. One method to produce a star 4-coloring is to partition the vertex set into a 2-independent set and a forest, where a 2-independent set is a set of vertices having pairwise distance more than 2. Such a partition is called an *I, F-partition.* We use the discharging method and other techniques to prove that every graph with maximum average degree less than $\frac{5}{2}$ has an I, F-partition, which is sharp and answers a question of Cranston and West. This result implies that planar graphs of girth at least 10 are star 4-colorable, improving upon previous results of Bu, Cranston, Montassier, Raspaud, and Wang. (Received September 21, 2015)

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