1138-05-349 **Amin Bahmanian*** (mbahman@ilstu.edu), IL , and **Sadegheh Haghshenas**, IL. *Extending edge-colorings of complete hypergraphs into regular colorings.*

Let $\binom{X}{h}$ be the collection of all h-subsets of an n-set $X \supseteq Y$. Given a coloring (partition) of a set $S \subseteq \binom{X}{h}$, we are interested in finding conditions under which this coloring is extendible to a coloring of $\binom{X}{h}$ so that the number of times each element of X appears in each color class (all sets of the same color) is the same number r. The case $S = \varnothing, r = 1$ was studied by Sylvester in the 18th century, and remained open until the 1970s. The case $h = 2, r = 1$ is extensively studied in the literature and is closely related to completing partial symmetric Latin squares.

For $S = \binom{Y}{h}$, we settle the cases $h = 4, |X| \geq 4.847323|Y|$, and $h = 5, |X| \geq 6.285214|Y|$ completely. Moreover, we make partial progress toward solving the case where $S = \binom{X}{h} \backslash \binom{Y}{h}$. These results can be seen as extensions of the famous Baranyai's theorem, and make progress toward settling a 40-year-old problem posed by Cameron. (Received February 13, 2018)