# CLIQUE PARTS INDEPENDENT OF REMAINDERS 

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Let $p$ and $t$ stand for positive integers. Let $R$ denote an edge subset of size $|R|=\binom{p}{2} \bmod t$ in the complete graph $K_{p}$. Call $R$ a remainder (or an edge $t$-remainder) in the clique $K_{p}$.

Conjecture $\mathbf{L}$ (L reminds of floor symbol). The floor class $\left\lfloor K_{p} / t\right\rfloor$ is nonempty. In other words, there exists a graph $F$ such that, for each edge $t$-remainder $R$ in $K_{p}, F$ is a $t$ th part of $K_{p}-R$, i.e., $F \in\left\lfloor K_{p} / t\right\rfloor$.
Conjecture L implies the following conjecture stated in [2].
Conjecture L*. For each edge $t$-remainder $R$ in $K_{p}$, there is an $F_{R} \in$ $\left(K_{p}-R\right) / t=:\left\lfloor K_{p} / t\right\rfloor_{R}$.

Theorem L' (Skupień [2]). There exists an edge $t$-remainder $R$ in $K_{p}$ such that the floor class $\left\lfloor K_{p} / t\right\rfloor_{R}$ is nonempty.
Plantholt's theorem [1] on chromatic index is equivalent to the truth of Conjecture L with $t=p-1$ and $p$ being odd.

Conjecture L can be seen true for many pairs $p$, $t$, e.g., if $t \geq p-1$ or $t$ is small: $t \leq 5$. If $t$ is a constant $(t \geq 4)$, both Conjectures can be reduced to some values of $p$ in the interval $t+2 \leq p \leq 4 t-5$.

## References

[1] M. Plantholt, The chromatic index of graphs with a spanning star, J. Graph Theory 5 (1981) 45-53.
[2] Z. Skupien, The complete graph t-packings and t-coverings, Graphs Combin. 9 (1993) 353-363.

