If $G$ and $H$ are two cubic graphs, then an $H$-coloring of $G$ is a proper edge-coloring $f$ with edges of $H$, such that for each vertex $x$ of $G$, there is a vertex $y$ of $H$ with $f(\partial_G(x)) = \partial_H(y)$. If $G$ admits an $H$-coloring, then we will write $H \prec G$. The Petersen coloring conjecture of Jaeger states that for any bridgeless cubic graph $G$, one has: $P \prec G$ [1]. Recently, the second author has introduced the Sylvester coloring conjecture, which states that for any cubic graph $G$ one has: $S \prec G$ [2], where $S$ is the well-known Sylvester graph on ten vertices. In this work, we prove the analogue of Sylvester coloring conjecture for cubic pseudo-graphs. Moreover, we introduce the analogue of this conjecture for simple cubic graphs. Our conjecture states that for any simple cubic graph $G$ one has $S' \prec G$, where $S'$ is the smallest simple cubic graph without a perfect matching. Related with this new conjecture, we conjecture that the new one implies the older one. Moreover, we show that if $G$ is a connected simple cubic graph with $G \prec S'$, then $G$ is isomorphic to $S'$. Finally, we show that any cubic graph $G$ has a coloring with edges of Sylvester graph $S$ such that at least $\frac{4}{5}$ of vertices of $G$ meet the conditions of Sylvester coloring conjecture.

**Keywords:** cubic graph; Petersen coloring conjecture; Sylvester coloring conjecture.

**AMS Subject Classification:** 05C15, 05C70.

**References**
