The strong chromatic index of a graph $G$, denoted by $s'(G)$, is the minimum number of colors in a coloring of edges of $G$ such that each color class is an induced matching. Erdős and Nešetřil conjectured that $s'(G) \leq \frac{5}{4} \Delta^2$ for all graphs $G$ with maximum degree $\Delta$. The problem is far from being solved and the best known upper bound on $s'(G)$ is $1.99\Delta^2$.

We will discuss the topological variant of $s'(G)$, denoted $s'_t(G)$ and called topological strong chromatic index. By a "topological relaxation" of the mentioned conjecture we mean the statement involving $s'_t(G)$ instead of $s'(G)$.

We show that for bipartite graphs $G$ we have $s'_t(G) \leq 1.703\Delta^2$. The proof uses the so-called $K_{1,m}$-theorem and is purely combinatorial.