

In the thesis, we are dealing with Hayashi's conjecture in the context of conjugation quandles. We analyze their connectedness and, by using ideas presented by David Stanovský and Petr Vojtěchovský in the proof of the claim that every quandle of this type, derived from symmetric groups, satisfies this conjecture, we derive a characterization of Hayashi's conjecture for a narrow class of quandles using purely group-theoretic concepts. This characterization states, among other things, that if we find a finite non-abelian simple group containing an element that is not the identity and that commutes with every element of its conjugacy class in at least one of its non-trivial powers, then Hayashi's conjecture does not hold. Furthermore, we follow up on the aforementioned proof and prove that the conjecture also holds for conjugation quandles derived from alternating and dihedral groups. In conclusion, we formulate attractive possibilities for further research on these quandles.