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Mérodie Lapointe*, lapointe.melodie@courrier.uqam.ca. *Automorphisms of the Free Group and Perfectly Clustering Words.*

Perfectly clustering words are a generalization of Christoffel words, introduced by Simpson and Puglisi in 2009. A word on an ordered alphabet $a_1 < a_2 < \dots < a_n$ is *perfectly clustering* if its Burrows-Wheeler transform has the following form: $a_n^{i_n} a_{n-1}^{i_{n-1}} \dots a_1^{i_1}$. Simpson and Puglisi describe the perfectly clustering words on a three letters alphabet. We consider certain automorphisms of the free group to generate all perfectly clustering words on an arbitrary alphabet. Our automorphisms are not morphisms of the free monoid, but the result is a generalization of the tree of Christoffel words. To achieve the main result we also use the bijection between clustering words and discrete interval exchange shown by Ferenczi and Zamboni. (Received September 13, 2019)