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Tan Nhat Tran* (trannhattan@math.sci.hokudai.ac.jp), Sapporo, Japan. *G-Tutte polynomials via arithmetics, combinatorics and topology.*

We introduce and study the notion of the G -Tutte polynomial for a list of elements in a finitely generated abelian group and an abelian group G through arithmetical, combinatorial and topological aspects. The G -Tutte polynomial establishes a common generalization of several “Tutte-like” polynomials such as the Tutte, arithmetic Tutte polynomials and the Tutte, characteristic quasi-polynomials. In the study through its arithmetics, we obtain a connection between the intersection posets of layers of a toric arrangement and the corresponding chromatic quasi-polynomials. About combinatorial consideration, we generalize the notion of characteristic polynomials of hyperplane and toric arrangements to those of abelian Lie group arrangements and give details of the corresponding characteristic polynomials. From the topological viewpoint, we prove that the G -Tutte polynomial is the main character in the formulation of the Poincaré polynomial of a certain abelian Lie group arrangement, which is a generalization of many other classical formulas. This talk is based on two recent joint works with Ye Liu and Masahiko Yoshinaga. (Received February 20, 2018)