

# On string polytopes II

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Let  $G$  be a semisimple algebraic group and  $B$  a Borel subgroup. The flag variety  $G/B$  is a smooth projective variety that has a fruitful connection with representations. Indeed, the set of global sections  $H^0(G/B, \mathcal{L})$  is an irreducible  $G$ -representation for a very ample line bundle  $\mathcal{L} \rightarrow G/B$ . On the other hand, string polytopes are combinatorial objects which encode the characters of irreducible  $G$ -representations. One of the most famous examples of string polytopes is the Gelfand–Cetlin polytope, and there exist combinatorially different string polytopes. The string polytopes are related with the geometry of flag varieties via the theory of Newton–Okounkov bodies. In this talk, we will study Gelfand–Cetlin type string polytopes, their enumerations, and we will present small toric resolutions of certain string polytopes. This talk is a continuation of the talk of Yunhyung Cho, and it is based on joint works with Yunhyung Cho, Jang Soo Kim, Yoosik Kim, and Kyeong-Dong Park.