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*Unimodality for certain families of Frobenius seaweed algebras.*

If  $\mathfrak{g}$  is a Frobenius Lie algebra, then for certain  $F \in \mathfrak{g}^*$  the natural map  $\mathfrak{g} \rightarrow \mathfrak{g}^*$  given by  $x \rightarrow F[x, -]$  is an isomorphism. The inverse image of  $F$  under this isomorphism is called a principal element. It has recently been established that if  $\mathfrak{g}$  is a Frobenius seaweed subalgebra of a classical Lie algebra, then the spectrum of the adjoint of a principal element consists of an unbroken set of integers whose multiplicities have a symmetric distribution. Extensive simulation suggest that the spectrum is unimodal – but the proof has been elusive in all classical types. Here, we establish unimodality in type A for certain families of maximal parabolic Frobenius seaweeds. We further provide explicit formulas to compute dimensions, yielding logarithmically concave sequences.

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