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Dimitar Grantcharov and **Khoa Nguyen***, khoa.nguyen2@uta.edu. *Exponentiation and Fourier transform of tensor modules of $\mathfrak{sl}(n+1)$.*

With the aid of the exponentiation functor and Fourier transform we introduce a class of modules $T(g, V, S)$ of $\mathfrak{sl}(n+1)$ of mixed tensor type. By varying the polynomial g , the $\mathfrak{gl}(n)$ -module V , and the set S , we obtain important classes of weight modules over the Cartan subalgebra \mathfrak{h} of $\mathfrak{sl}(n+1)$, and modules that are free over \mathfrak{h} . Furthermore, these modules are obtained through explicit presentation of the elements of $\mathfrak{sl}(n+1)$ in terms of differential operators and lead to new tensor coherent families of $\mathfrak{sl}(n+1)$. An isomorphism theorem and simplicity criterion for $T(g, V, S)$ is provided. (Received January 18, 2021)