1145-18-1652 **Kenichi Shimizu***, 307 Fukasaku, Minuma-ku, Saitama-shi, Saitama 337-8570, Japan. *A description of the relative Serre functor for comodule algebras.*

Let $\mathcal{C}$ be a finite tensor category, and let $\mathcal{M}$ be an exact left $\mathcal{C}$-module category. The relative Serre functor of $\mathcal{M}$, introduced by Fuchs, Schaumann and Schweigert, is an endofunctor S on $\mathcal{M}$ such that there is a natural isomorphism $\underline{\mathrm{Hom}}(M,N)^* \cong \underline{\mathrm{Hom}}(N,S(M))$ for $M,N \in \mathcal{M}$, where $\underline{\mathrm{Hom}}$ is the internal Hom functor. In this talk, I discuss the case where $\mathcal{C} = H$-mod and $\mathcal{M} = L$-mod for a finite-dimensional Hopf algebra H and a finite-dimensional exact left H-comodule algebra L. Such an algebra L is shown to be Frobenius by an argument using the Frobenius-Perron dimension. I give an explicit description of the relative Serre functor of L-mod and its twisted module structure $S(X \otimes M) \cong X^{**} \otimes S(M)$ ($X \in H$-mod, $M \in L$-mod) in terms of integrals of H and the Frobenius structure of L. (Received September 23, 2018)