# Hopf25

**Dmitri Nikshych**
University of New Hampshire, Durham, USA
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**Tannakian radical and mantle of a braided fusion category**

This is a report on a joint work with Jason Green. It is known that the presence of a Tannakian subcategory in a braided fusion category $B$ allows one to reconstruct the latter as a certain group-theoretical extension ("gauging") of a smaller category, called the localization of $B$. For example, twisted Drinfeld doubles are precisely gaugings of the category of vector spaces. A notable drawback of this construction is that the gauging group is not defined canonically, for instance, Drinfeld doubles of non-isomorphic groups can be equivalent as braided fusion categories. To address this issue, we define a Tannakian radical of $B$ as the intersection of its maximal Tannakian subcategories. By Deligne's theorem, this yields a canonical group $G(B)$ associated to $B$. The corresponding localization of $B$, termed the mantle, admits a central $G(B)$-graded extension which is a complete invariant of $B$.

We investigate the properties of this invariant and discuss its applications in the classification of fusion categories. An intriguing aspect of our analysis is that studying braided fusion categories over the complex numbers naturally leads us to explore orthogonal representations of finite groups on quadratic vector spaces over finite fields.