Pointed Fusion Categories Over Non-Algebraically Closed Fields

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A fundamental study in the field of quantum algebra is the study of fusion categories, which generalize finite groups and their representation categories. They also yield the structures of topological quantum computers and can help classify quantum phases of matter in physics. Pointed fusion categories over C, the complex numbers, are completely classified. In this project, we consider these categories over non-algebraically closed fields. We classify pointed fusion categories over arbitrary fields as well as the functors between them.

Awards Won:
American Mathematical Society: One-Year Membership to American Mathematical Society to each winner (7 winning projects, up to 3 team members per project)
American Mathematical Society: Third Award of $500
Mu Alpha Theta, National High School and Two-Year College Mathematics Honor Society: Second Award of $1,000