

CCSU  
DEPARTMENT OF MATHEMATICAL SCIENCES  
COLLOQUIUM

Friday, October 7  
3:00 – 4:00 PM  
Maria Sanford, Room 101

**THE TRANSFORMATION OF  
K-12 GEOMETRY  
THROUGH TRANSFORMATIONS**

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**Abstract:** Changes to K-12 mathematics standards have produced a shift in the way geometry is taught at the secondary level over the past 12 years. There is now a stronger focus on spatial visualization along with an emphasis on mathematical reasoning using geometric transformations. This new emphasis changes the way students may reason about geometric objects, introducing new challenges for students. Students are asked to develop an understanding of the mathematical properties of geometric transformations, which can be difficult when learning the formal definitions. Students may also have difficulty using isometry properties to develop successful strategies for problem solving. This talk will examine the changes to the standards, tracing the trajectory from elementary to high school, and then begin to examine the types of spatial and geometric reasoning needed for success in geometry. Episodes from three students' work on rotations and reflections in a dynamic geometry software program's grid environment will be analyzed. The presentation will show the challenges students faced in locating the reflection and rotation images of shapes on a grid, analyze these challenges in the context of the theories of coordination and integration to identify where students' strategies broke down, and identify the "properties-in-action" students developed as they integrated their spatial and analytic strategies to solve problems.

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**For further information:** [gotchevi@ccsu.edu](mailto:gotchevi@ccsu.edu); 860-832-2839; <https://web.ccsu.edu/colloquium/>