

**Mathematical Sciences**  
**Center for Faculty Development<sup>1</sup>**

**20 November 2008**  
**1:55 PM Room – 344 Thayer Hall**  
**United States Military Academy, West Point NY**

**DR Elisha Peterson**

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**United States Military Academy**

**Dynamic Mathematics and Pursuit/Evasion Games**

**Abstract:**

Pursuit/Evasion Games are simple games in which the primary objective is either to chase down the opposing team, or to avoid capture by the opposing team. These games are played out all around us. Think of football, ultimate frisbee, and capture-the-flag... and what would Hollywood do without car chases? Exact solutions can be found for simple versions of these games using differential equations. However, this talk focuses on visualizations of these games when there are two or more teams and lots of players involved. Several scenarios will be illustrated using a Java platform that automatically updates solutions whenever parameters are changed. This visual approach is one example showing how making mathematics "dynamic" can lead to additional insights into the underlying situation.

**About the Speaker**

Elisha Peterson received a BS in Mathematics from Harvey Mudd College, and completed graduate work at Oxford University and the University of Maryland, College Park, where he was awarded a PhD in 2006. He is a Davies Fellow and Assistant Professor at the United States Military Academy (West Point), where he has been since the Fall of 2006. His research interests include diagrammatic algebras and their applications, pursuit-evasion games, and the mathematics of cooperation. When possible, Elisha enjoys spending time with his family, running, and competing in triathlons, as well as implementing and visualizing mathematics using the Java programming language.

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