

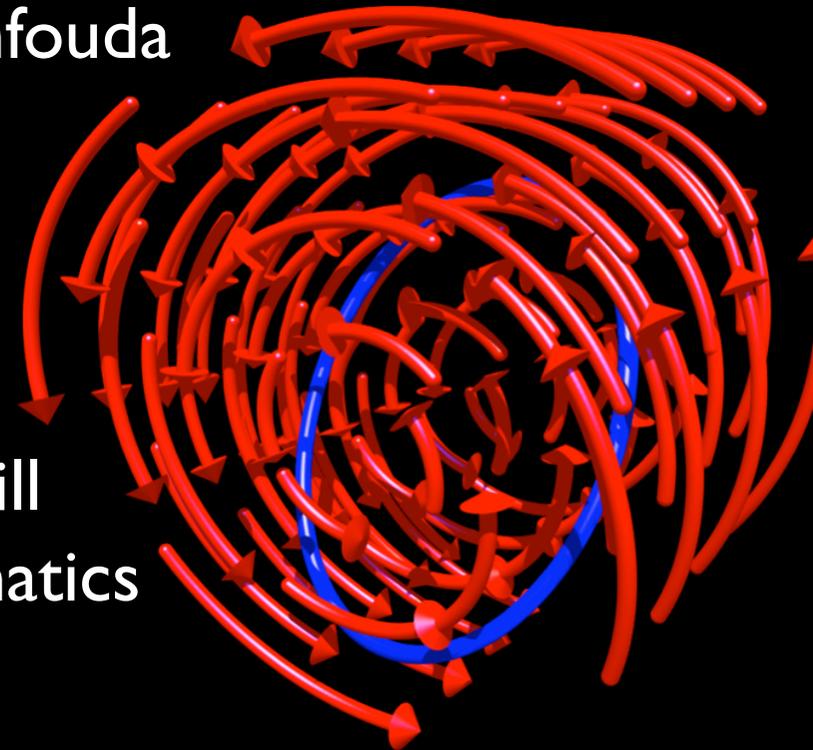
# Exploring Vectorfields Curl and Divergence using Flash



PITF: David Drew Mahfouda

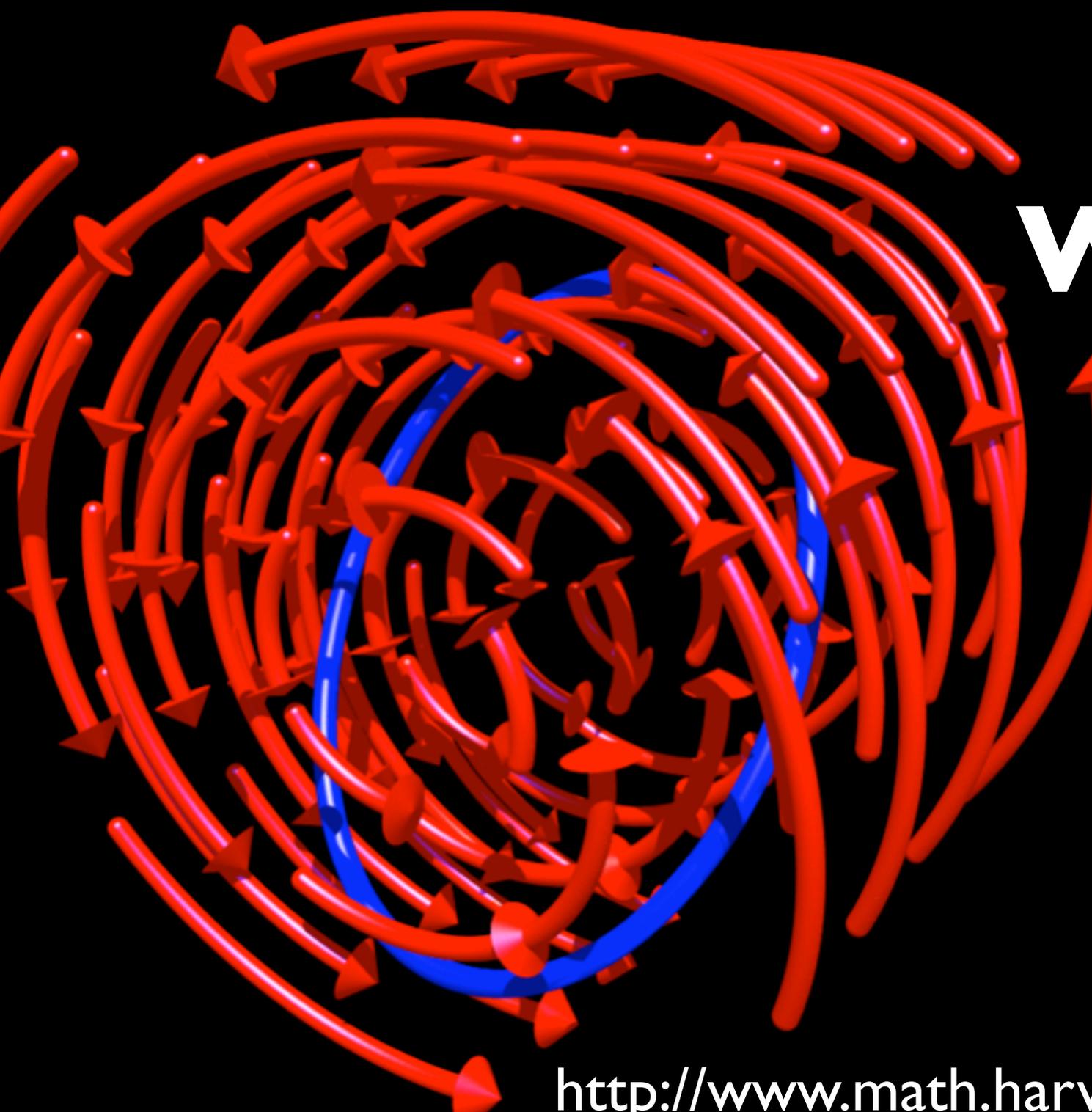


Faculty: Oliver Knill  
Preceptor of Mathematics



# Aim:

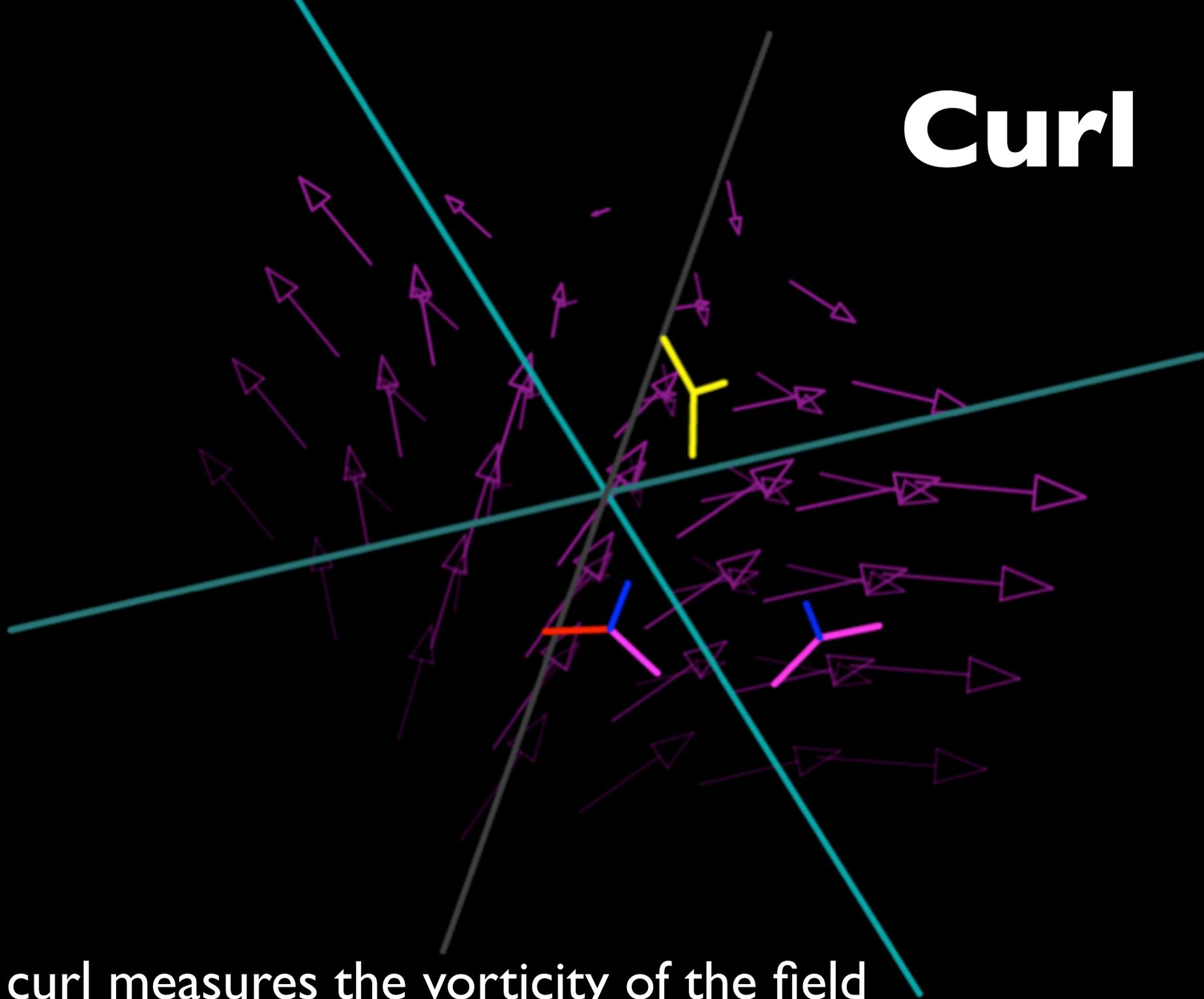
- Produce Flash Applications for Multivariable Calculus.
- Visualize Divergence and Curl with interactive tools.

A 3D visualization of a vector field. The field is represented by numerous red arrows of varying lengths and directions, all originating from a central region and pointing outwards. The arrows are arranged in a dense, swirling pattern, suggesting a complex flow or field. A single blue path is highlighted, starting from the center and following a curved trajectory through the field. The background is black, making the red and blue elements stand out.

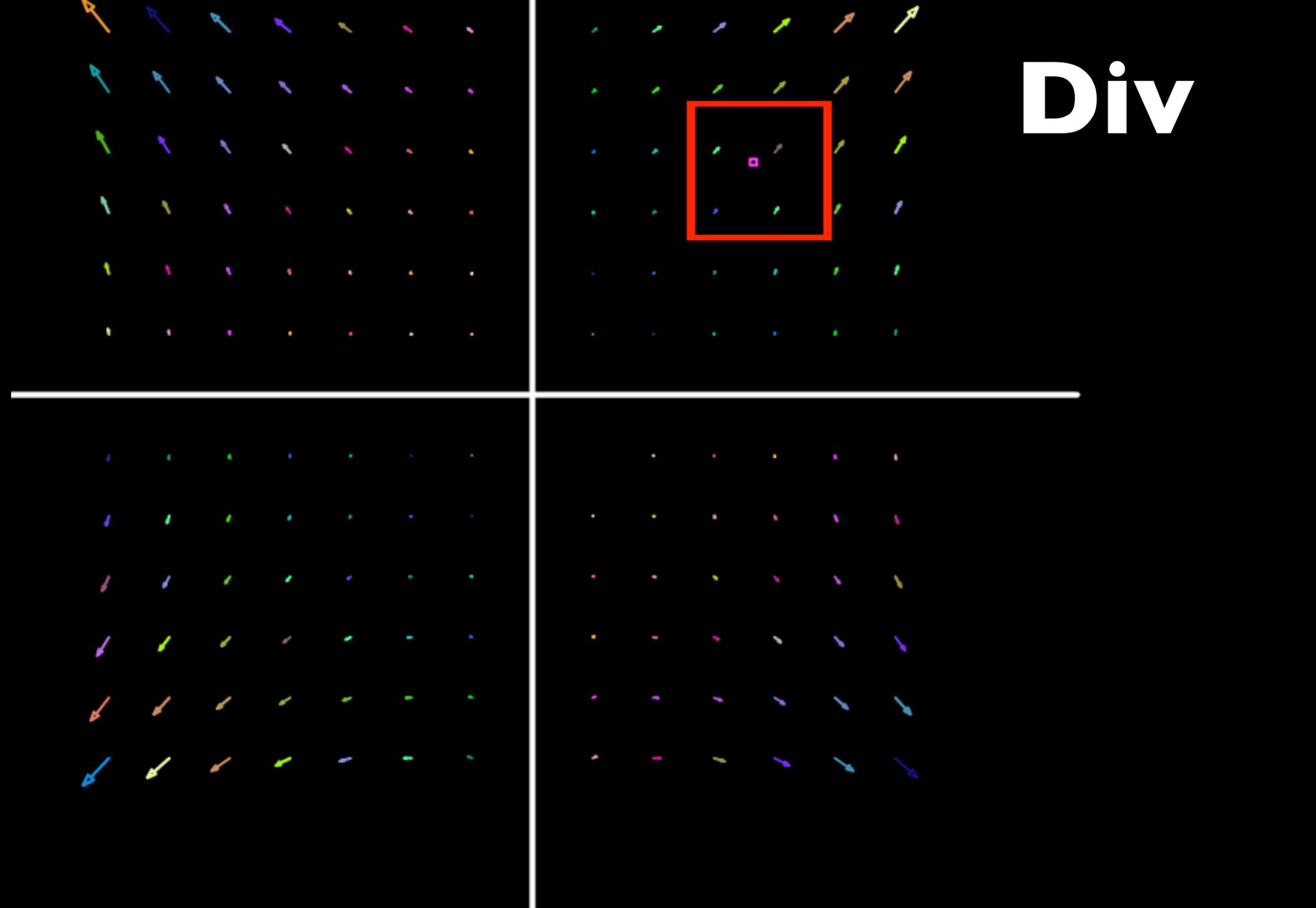
**Website**

<http://www.math.harvard.edu/~knill/pitf>

# Curl



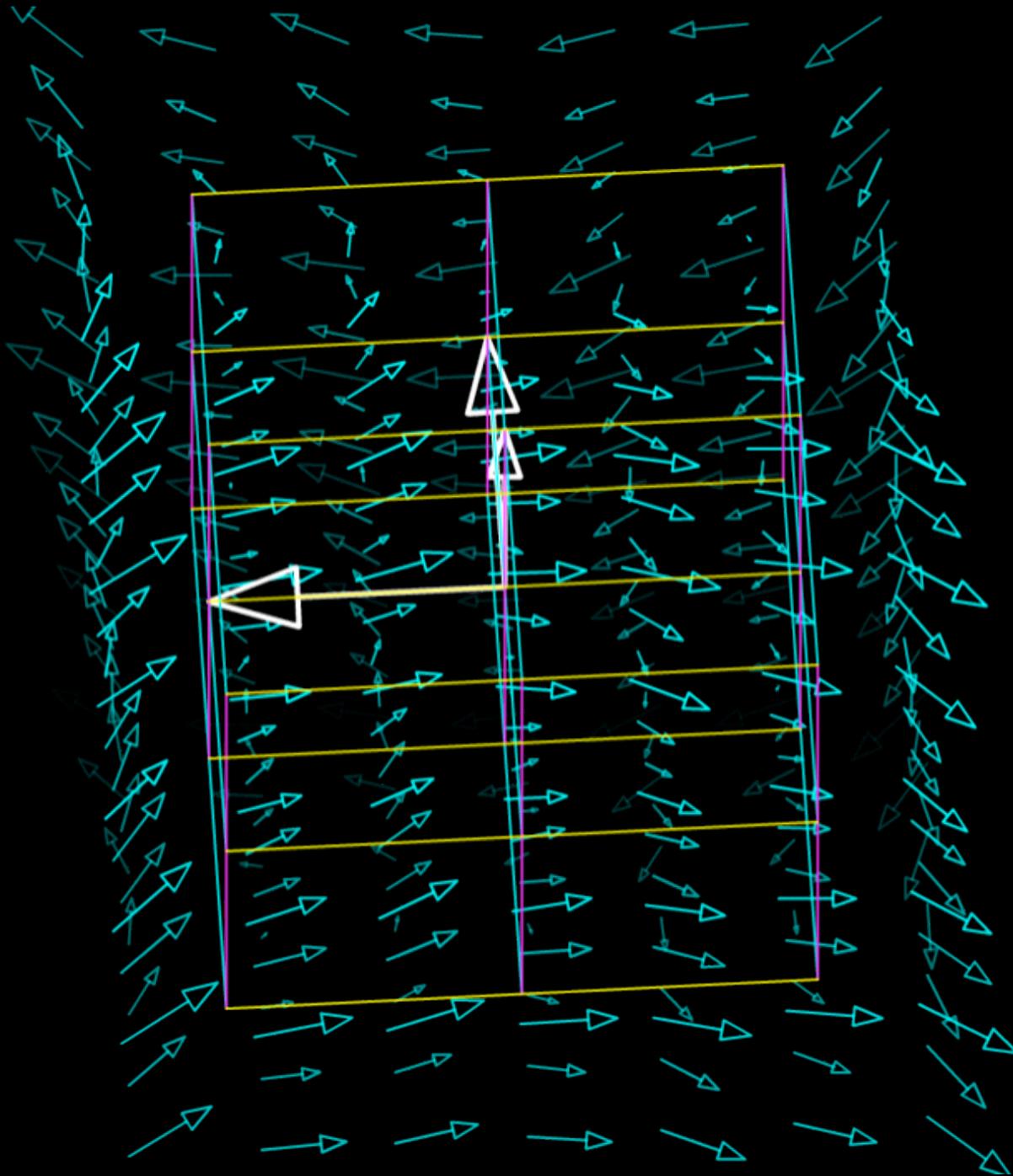
curl measures the vorticity of the field



**Div**

divergence measures the expansion of the field

# 3D Visualization



# Benefits

- Explore Flash as an alternative to Java applets
- Deliver interactive features in course websites.
- Build actionscript building blocks for future projects

# PITF-Faculty interaction

The student gained experience in delivering abstract mathematical content in a visual and interactive way. The challenges were to combine:

● technology

● pedagogy

● mathematics



programming ●

planning ●