



2013 Spring Physics Colloquium Series

## Harry Swinney, Ph.D.

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### *Emergence of Order in Physical, Chemical, and Biological Systems*

The emergence of patterns is one of the world's most durable mysteries. Some patterns (clouds, zebra stripes) form in space, while others (the ebb and flow of tides, cardiac rhythms) form in time. We consider here how ordered patterns emerge in systems that are driven away from thermodynamic equilibrium by, for example, a gradient in pressure, velocity, temperature, or nutrient concentration. Although there is no general theory of pattern formation, new analysis techniques enable quantitative comparisons of patterns such as the spirals in a frog egg, a fibrillating heart, and an ocean eddy. Insight into pattern formation in diverse systems with different sizes and different underlying mechanisms can be gained from a common approach, as will be illustrated with examples from physics, chemistry, and biology.

**Wednesday, March 6, 2013**

**4:00 p.m.**

**Room E.125, Baylor Sciences Building**

**Reception at 3:40 p.m. in BSB D.311**

**For more information contact:**

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