

The Humboldt State University Department of Mathematics  
Proudly Presents:

## The 55th Harry S. Kieval Lecture\*\*



Robert J. Lang  
Robert J. Lang Origami



# “From Flapping Birds to Space Telescopes: The Modern Science of **Origami**”

The last decade of this past century has been witness to a revolution in the development and application of mathematical techniques to *origami*, the centuries-old Japanese art of paper-folding. The techniques used in mathematical origami design range from the abstruse to the highly approachable. In this talk, Dr. Lang will describe how geometric concepts led to the solution of a broad class of origami folding problems – specifically, the problem of efficiently folding a shape with an arbitrary number and arrangement of flaps, and along the way, enabled origami designs of mind-blowing complexity and realism, some of which you’ll see, too. As often happens in mathematics, theory originally developed for its own sake has led to some surprising practical applications. The algorithms and theorems of origami design have shed light on long-standing mathematical questions and have solved practical engineering problems. Dr. Lang will discuss examples of how origami has enabled safer airbags, Brobdingnagian space telescopes, and more.

Tuesday, March 9, 2010

7:30 P.M.

Van Duzer Theater

\*\*A lecture on some popular and/or broad aspects of mathematics attractive to undergraduates and the public  
For More Information go to: <http://www.humboldt.edu/~mathdept/HarrySKieval/kl.html>

HSU is an AA/EO institution.

Disability accommodations may be available from event sponsor at 826-5347

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# MATHEMATICS DEPARTMENT COLLOQUIUM

Robert J. Lang  
Robert J. Lang Origami

## "Mathematical Methods in Origami Design"

The last decade of this past century has been witness to a revolution in the development and application of mathematical techniques to origami, the centuries-old Japanese art of paper-folding. The techniques used in mathematical origami design range from the abstruse to the highly approachable, and tap into diverse mathematics ranging from Euclid up to the latest developments in computational geometry. In this talk, Dr. Lang will describe how geometric concepts have led to the solution of a broad class of origami folding problems, including the problem of efficiently folding a shape with an arbitrary number and arrangement of flaps, and new geometric forms known as "origami tessellations." Along the way, mathematical methods have enabled origami designs of mind-blowing complexity and realism, some of which you'll see, too.

As often happens in mathematics, theory originally developed for its own sake has led to some surprising practical applications. The algorithms and theorems of origami design have shed light on long-standing mathematical questions and have solved practical engineering problems. Dr. Lang will discuss examples of how origami has enabled safer airbags, Brobdingnagian space telescopes, lifesaving medical advances, and more.



**Tuesday, March 9, 2010**

**4:00 P.M. Science B 133**

**Pre-Colloquium Tea**



**3:30 P.M., BSS 3rd Floor Open Alcove Area**

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**Robert J. Lang** is recognized as one of the foremost origami artists in the world as well as a pioneer in computational origami and the development of formal design algorithms for folding. With a Ph.D. in Applied Physics from Caltech, he has, during the course of work at NASA/Jet Propulsion Laboratory, Spectra Diode Laboratories, and JDS Uniphase, authored or co-authored over 80 papers and 45 patents in lasers and optoelectronics as well as authoring, co-authoring, or editing 9 books and a CD-ROM on origami. He is a full-time artist and consultant on origami and its applications to engineering problems but moonlights as the Editor-in-Chief of the *IEEE Journal of Quantum Electronics*.