

# Art, Sculpture, And Holography Collide With Science At Fermilab

By Tracy M. Schwab

More than 600 physics students, faculty, and Sigma Pi Sigma members convened at the Fermi National Accelerator Laboratory (Fermilab) in Batavia, IL, Nov. 6–8, 2008, for the 2008 Sigma Pi Sigma Congress. They spent a packed weekend making new connections, interacting with Fermilab scientists and distinguished speakers, debating common concerns for science and society, and touring Fermilab's unique experiments and grounds.

One of the cross-disciplinary themes explored during this gathering was "Art and Science." Fermilab's rich history as a center for culture and art, as well as a center for science, inspired Sigma Pi Sigma to host the honor society's first nationwide art competition during the Congress. The main meeting venue, Fermilab's iconic Wilson Hall, houses a soaring 16-story atrium that provided a spectacular setting for 33 works of art submitted by meeting participants for this event, the majority of which were created by undergraduate members of SPS.

At the time of the Congress, Fermilab was hosting a special exhibit titled "Intersections: The Art and Science of Light." Holography artist Lori Napoleon (see article on page 7), one of the guest exhibitors, was invited by Sigma Pi Sigma to talk about art, science and her work, and she joined Fermilab Art Curator Georgia Schwender and several members of the Congress planning committee in judging the art contest.

Aligned with the Congress theme "Scientific Citizenship: Connecting Physics and Society," entries were received for judging or display in three categories: The Citizen Scientist, Future Faces of Physics, and General Science. Artwork was judged on the following criteria: artistic merit, originality, category-specific attributes, the



*A ground-floor view of Wilson Hall's 16-story atrium.*

accompanying abstract, and adherence to contest rules. This article features the works presented with the Best in Show, Curator's Choice, Artist's Choice, and People's Choice Awards. To view a

slide show of all the award-winning art, as well as abstracts of all the entries, visit [www.sigmapisigma.org/congress/2008/art.htm](http://www.sigmapisigma.org/congress/2008/art.htm).



Photo by Aaron Padon

**Best in Show**  
***The Particle Decay Series***  
**Kristal Feldt**  
**University of Kansas**

**Abstract**

The goal I wish to achieve in the art field is not to go the average route of replicating organics, but instead bring light to the beauty of science. I seek to design sophisticated art jewelry and small-scale sculpture that brings the elegance of scientific phenomena and concepts, particularly in the realm of physics, to the everyday person. I intend to accomplish this by taking my understanding of the literal and conceptual views of different topics (which I do personal research to understand to the best of my ability) and creating something beautiful out of it. In *The Particle Decay Series*, I created a line of artistic jewelry to express the nature of particle decay through its collision patterns. The set includes a hairpin, necklace, bracelet, earrings, brooch, and ring.

**Also of interest**

“The art of physics: KU junior’s jewelry, sculpture designs win national prizes”, by Erin Curtis-Dierks, *University of Kansas News*, Dec. 5, 2008. [www.news.ku.edu/2008/december/5/physicsart.shtml](http://www.news.ku.edu/2008/december/5/physicsart.shtml)



Photo by Phillip Pyette

**Curator’s Choice**  
***Fractalline Fluids***  
**Jeanette Powers,**  
**Rockhurst University**

**Abstract**

This painting represents a dynamic system of the movement of fluid and the drying rate and interactions of acrylic pigment. The fractured surface is created by crumpling cellophane over a wet surface of paint. Pigment is then forced into the channels of the cellophane while the canvas is tilted at an angle, to allow gravity to pull the pigment down through the fractured system. This technique I have developed allows the artist to use the natural mixing that fluid dynamics creates, along with the con-

trol of the artist, to create an art piece which exists on the boundary between order and chaos. The result is a chaotic landscape reminiscent of leaves, cells, rivulets, the cracked dirt of arid land: all chaotic processes which leave a recognizable mark. The pattern is not exact but exhibits self-similarity at different scales. In my experience, the struggle with creating science-based art is to keep the technical details while still creating art which is warm, human, and ultimately relates to people from all walks of life.



Photo by Phillip Pyette

**People’s Choice**  
***Jovian Marbles (digital painting)***  
**Douglas Parsons**  
**Angelo State University**

**Abstract**

Recently the New Horizons probe, on its way to explore Pluto, passed by the Jovian System and took some rather nice snapshots of the system. This is not a representation of Jupiter, but rather just a simple gas giant system in orbit around some far-off star system.

**Artist’s Choice**  
***The Bubble Chamber Reliquary***  
**Kristal Feldt,**  
**University of Kansas**

**Abstract**

The Bubble Chamber Reliquary was a project for my introductory course to metalsmithing. A previous course in

astronomy at the university and further research introduced me to the beauty of neutrinos and particle collisions, which have become recurring themes in both my sculpture and art jewelry. So I created a spherical container to place symbols of my sister (a more logical mind, symbolized by a Feynman diagram) and myself (a more creative mind, symbolized by the visual representation of a particle collision).

The reliquary itself is sealed shut (a symbol of the inescapable blood bond between the two of us). The holes, or bubbles, help represent the bubble chamber in which the particle collision occurs and give the observer a peek at the symbols inside. The bubbles might appear to be random at first glance, but a look at the side shows that they actually are symmetrical to the bubbles on the other side.



Photo by Aaron Paden

## Light As a Medium Unto Itself

By Lori Ann Napoleon, [lori.napoleon@gmail.com](mailto:lori.napoleon@gmail.com)

**W**hy do makers make things? What are we saying here, attempting to do? To reveal or transform, to show alternatives, to make ignored or “mundane” phenomena comprehensible and evocative, to play and inspire others to do the same!

I was initially attracted to holography for its haunting realism and reconstruction of depth; the “magic” of an ethereal, simulated image (“suspending the real” as French philosopher Jean Baudrillard would say). But it was the process of learning how they actually work which led to a fascination with optics and, subsequently, physical phenomena on every scale. As I began to look at the world through a diffraction grating, I was compelled to shift my artistic focus from my original training in painting, to explorations in light as a medium unto itself.

Nearly all of my work involves a component of light. Issues of light and color relate to so many fields, from aspects of particles, detectors, and the

electromagnetic spectrum, to psychological moods and social associations. Beyond its countless behaviors, light is an extremely powerful communications vehicle which exudes emotion, helps us navigate, and conveys information. The multiple disciplines that this medium crosses provides numerous models of viewing “reality”. Always present is this simultaneity between our sensing of the physical world and our interpretation of it. I strive to place my work on the cusp of these two types of experience by bringing out the physicality of the material while making aesthetic decisions that still leave space for mystery and wonder. Engaging the immediacy of our sensory perceptions—the passage of time, light, shadow, transparency—just to be able to grab someone’s attention and make them deeply look at something in order to inspire wonder and curiosity in the viewer is my goal. I see light as a delicate interplay of serene to quirky physical attributes coupled with the emotional content of moods, dreams, and mythologies.

Understanding the nature of light has led, of course, to scientific innovations and countless applications which have affected the world immeasurably—from revealing the contents and motions of stars to extending our working hours well past sundown. But it also inspires appreciation of structure and our own perception in a way that can be observed in the everyday lives of anyone with two retinas, our own biological interface.

My interests in the “nature of nature”



Holography artist Lori Ann Napoleon works on a self-portrait.

Patrick Boyd, Spatial Imaging (UK)



Lori Ann Napoleon holds the completed hologram of herself.

Patrick Boyd, Spatial Imaging (UK)