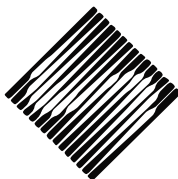


# ACM SIGGRAPH VIDEO REVIEW



## ISSUE 61

Supercomputing '90 Visualization Theater  
featuring pieces from SIGGRAPH '90  
*part 1 of 2*

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## **ACM SIGGRAPH Video Review**

### **Issue 61**

Supercomputing '90  
Visualization Theater  
featuring pieces from  
SIGGRAPH '90  
*part 1 of 2*

## **1. The Politics of Pleasure**

### **Contact:**

Stephan Meyers  
Electronic Visualization  
Laboratory  
Univ. of Illinois at Chicago  
Box 4348 (M/C 154)  
Chicago, IL 60680 USA  
1-312-996-3002

### **Technical Notes:**

The human papilloma virus (HPV) is a sexually transmitted virus that can cause cervical cancer in women. This visualization is a unique blend of art and science — showing beauty in the symmetry of one of nature's killing machines.

### **Produced by:**

Stephan Meyers, Donna Cox,  
Ellen Sandor

### **Hardware:**

AT&T Pixel Machine 946dX with  
Sun 3/280

### **Software:**

AT&T Pixel Machine RAYlib,  
In house

*For information regarding the purchase of SIGGRAPH Video Review tapes, contact:*

**SIGGRAPH Video Review  
c/o 1st Priority  
P.O. Box 576  
Itasca, Illinois 60143-0576**

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**Within USA: 800-523-5503  
Outside USA: 708-250-0807  
FAX: 708-250-0038**

## 2. Splash Dance

### Contact:

Michael Kass  
Apple Computer, Inc.  
20525 Mariani Ave.  
M/S 60-W  
Cupertino, CA 95014  
USA  
1-408-974-1754

### Technical Notes:

The water's motions illustrate the new technique described in the SIGGRAPH '90 paper, "Rapid, Stable, Fluid Dynamics in Computer Graphics" by Michael Kass and Gavin Miller.

### Produced by:

Michael Kass and Gavin Miller,  
Apple Computer Advanced  
Technology Group

### Hardware:

SGI 4D/210

### Software:

In house, proprietary

## 3. 1990 CFD Highlights

### Contact:

Chris Gong  
NASA Ames Research Ctr.  
Mail Stop 258-2  
Moffett Field, CA 94035  
USA  
1-415-604-4459

### Technical Notes:

A collection of state-of-the-art simulations of computational

fluid dynamics (CFD) done at NASA Ames. Included are animations of an F-18, a hot jet and an artificial heart.

### Produced by:

NASA Ames Research Center

### Hardware:

Supercomputers, SGI IRIS  
4D/70 GT

### Software:

GAS (Graphics Animation System), SURF, PLOT3X

## 4. Visualizing Fermat's Last Theorem

### Contact:

Andrew J. Hanson  
Computer Science Dept.  
Indiana University  
Bloomington, IN 47405  
USA  
1-812-855-5855

### Technical Notes:

Visualization is applied to the study of Fermat's Last Theorem, a famous unsolved problem in number theory.

### Produced by:

Andrew J. Hanson, Computer Science Dept. and Center for Innovative Computer Applications, Indiana University

### Hardware:

Stardent TITAN

### Software:

Wavefront, Stardent Doré

## 5. Numerical Simulations of Cosmic Jets

### Contact:

T. Todd Elvins  
SDSC  
Box 85608  
San Diego, CA 92158  
USA  
1-619-534-5000

### Technical Notes:

This visualization illustrates a magneto-hydrodynamics simulation of a cosmic jet.

### Produced by:

San Diego Supercomputer  
Center Advanced Scientific  
Visualization Laboratory

### Hardware:

Cray X-MP/48, SUN 3/160,  
Pixar Image Computer

### Software:

SDSC Imaging Code,  
NRAO Simulation Code

## 6. The Formation of the Solar System

### Contact:

David R. Nadeau  
SDSC - Advanced Scientific  
Visualization Lab.  
Box 85608  
San Diego, CA 92158  
USA  
1-619-534-5000

### Technical Notes:

This educational tape illustrates the formation of the solar

system for the Rueben H. Fleet Space Center's planetarium show.

### Produced by:

San Diego Supercomputer  
Center Advanced Scientific  
Visualization Laboratory

### Hardware:

Silicon Graphics IRIS 4D/70

### Software:

Alias

## 7. Sierpinski Blows His Gasket

### Contact:

John C. Hart  
Electronic Visualization  
Laboratory  
Univ. of Illinois at Chicago  
Box 4348 (M/C 154)  
Chicago, IL 60680  
USA  
1-312-996-3002

### Technical Notes:

Sierpinski's Gasket extends to 3-dimensions, falls down a flight of stairs, and transforms into a 3-D extension of the twin dragon. Its motions are determined by physical-based modeling descriptions incorporated into its database.

### Produced by:

John Hart and Sumit Das,  
Electronic Visualization Lab.,  
University of Illinois at Chicago

**Hardware:**

AT&T Pixel Machine 964dX,  
SGI Personal IRIS

**Software:**

In-house, AT&T Pixel Machine  
DEVtools, SGI Graphics Library

## 8. PSC 1990 Sampler

**Contact:**

Joel Welling  
(PSC) - Pittsburgh  
Supercomputing Center  
4400 Fifth Avenue  
Pittsburgh, PA 15213  
USA  
1-412-268-4960

**Technical Notes:**

PSC's current sampler contains visualizations of a supernova, fractals, molecular dynamics, Cray memory diagnostics, lymph node reconstructions and a fly-by of Los Angeles.

**Produced by:**

Anjana Kar and Joel Welling,  
Pittsburgh Supercomputing  
Center

**Hardware:**

Cray Y-MP, Peritek frame  
buffer, Silicon Graphics  
workstation

**Software:**

GPLOT, P3D, DrawCGM,  
OASIS ray tracer

## 9. Lively IFS

**Contact:**

Gordon Lescinsky  
Electronic Visualization  
Laboratory  
Univ. of Illinois at Chicago  
Box 4348 (M/C 154)  
Chicago, IL 60680 USA  
1-312-996-3002

**Technical Notes:**

This computer art piece was created by manipulating the parameters of an iterated function system (IFS) of six transformations over time, and then rendered using reverse iteration.

**Produced by:**

Gordon Lescinsky, Electronic  
Visualization Lab., University of  
Illinois at Chicago

**Hardware:**

AT&T Pixel Machine 946dX with  
Sun 3/280

**Software:**

In-house, PV-WAVE, AT&T  
Pixel Machine DEVtools

## 10. Cold Front Moving Across the North Atlantic

**Contact:**

Bill Hibbard  
Space Science & Eng. Cntr.  
Univ. of Wisc. at Madison  
1225 W. Dayton St.  
Madison, WI 53706 USA  
1-608-263-4427

**Technical Notes:**

This is an unedited, real-time, interactive, visual exploration of forecast data of cold fronts moving across the North Atlantic.

**Produced by:**

Bill Hibbard and Dave Santek

**Hardware:**

Stardent ST-2000

**Software:**

VIS-5D

## 11. ANL's Scientific Visualization Promo Tape

**Contact:**

Fred Dech  
Argonne Natl. Lab (ANL)  
9700 S. Cass Ave.,  
CTD C240  
Argonne, IL 90439  
USA  
1-708-972-5150

**Technical Notes:**

This is a sampler of several, short, scientific animations done by ANL scientists in collaboration with the visualization group.

**Produced by:**

Argonne National Laboratory

**Hardware:**

Stardent TITAN 2000

**Software:**

In-house C code, Doré

## 12. Ductile Flow

**Contact:**

Craig Reynolds  
Symbolics, Inc.  
1401 Westwood Blvd.  
Los Angeles, CA 90024  
USA  
1-213-478-0681

**Technical Notes:**

This sequence visualizes flow systems by deforming perfectly ductile objects. Polyhedral objects are placed in flow fields, their vertices following the streamlines of the flow. Faces and edges are sub-divided or 'unsubdivided' to provide flexibility.

**Produced by:**

Craig Reynolds, Symbolics, Inc.

**Hardware:**

Symbolics 3650

**Software:**

Symbolics S-Geometry,  
S-Dynamics, S-Render,  
S-Record; experimental  
software

## 13. Electron Densities of the AZT Molecule

**Contact:**

F. Dech & T.J. O'Donnell  
Electronic Visualization Lab  
Univ. of Illinois at Chicago  
Box 4348 (M/C 154)  
Chicago, IL 60680 USA  
1-312-996-3002

**Technical Notes:**

Point cloud renderings depict the electron densities of the molecular orbitals of the AZT (azidothymidine) molecule, a drug used in the treatment of AIDS. Data courtesy of the Cambridge Crystallographic Data Bank.

**Produced by:**

Fred Dech, T. J. O'Donnel,  
Electron Visualization  
Laboratory, University of Illinois  
at Chicago

**Hardware:**

Cray 2, IBM 3081, AT&T  
Pixel Machine, Stardent TITAN

**Software:**

In-house C code, GAUSSIAN  
'86, AT&T Pixel Machine  
PIClib, GRAMPS

## 14. Forest Fire Simulation

**Contact:**

Geoffrey Y. Gardner  
Grumman Data Systems,  
MS D12-237  
1000 Woodbury Rd.  
Woodbury, NY 11797  
USA  
1-516-682-8417

**Technical Notes:**

This dynamic simulation of a forest fire propagation uses textured ellipsoids driven by a heuristic model that manipulates ellipsoid shapes and positions, and varies textural translucence.

**Produced by:**

Geoffrey Gardner, Grumman  
Data Systems

**Hardware:**

Silicon Graphics IRIS 4D/70

**Software:**

In-house FORTRAN code

## 15. Landscape Dynamics of Yellowstone Park

**Contact:**

Deanna Walker  
NCSA  
605 E. Springfield Ave.  
Champaign, IL 61820  
USA  
1-217-244-1996

**Technical Notes:**

This simulation demonstrates how fire affects landscape diversity. Data used for this simulation was collected at Yellowstone National Park by taking non-destructive treecore samples.

**Produced by:**

Visualization Services and  
Development, NCSA

**Hardware:**

CRAY X-MP, Macintosh II

**Software:**

In-house FORTRAN code

# 16. Computational Quantum Chemistry in Catalysis Research

**Contact:**

Deanna Walker  
NCSA  
605 E. Springfield Ave.  
Champaign, IL 61820  
USA  
1-217-244-1996

**Technical Notes:**

Visualizations of various catalysis involving chromium chloride, magnesium oxide and faujasite clusters. Done in collaboration with the Amoco Oil Company.

**Produced by:**

Visualization Services and  
Development, NCSA

**Hardware:**

Silicon Graphics 4D/20, 4D/80  
and 4D/240 GTX

**Software:**

In-house, Wavefront



### **Additional Issues:**

#### **ACM SIGGRAPH VIDEO "HDTV & The Quest for Virtual Reality" ISSUE 60**

*The broadcast world is about to collide with the computer graphics world. Think of this as your survival manual. This two-tape video report, including transcript and reference documentation, will give you an up-to-the-minute overview of the standards, hardware and controversies that are as rooted in geopolitical and philosophical differences as they are technological.*

#### **ACM SIGGRAPH '90 Animation Screening Room (part 2 of 3) ISSUE 68**

1. *Hadrosaurus - Rosenfeld*
2. *Stegosaurus: The Roof Lizard - Donkin, Ohio State University*
3. *Magma Tours - Ajisawa*
4. *In Search of the Fingerprints of God - Bushell*
5. *EDO - Sugimoto, Tokyo Research Lab.*
6. *The Dream of Mr. M - Sakamoto*
7. *Hubble Space Telescope - Rossman*
8. *S.S. Freedom -The Ultimate Challenge - Legensky, Intelligent Light*
9. *An Afternoon with John Whitney - Em & Em*

#### **ACM SIGGRAPH '90 Animation Screening Room (part 3 of 3) ISSUE 69**

1. *Pacific Data Images - Gaeta*
2. *Special Effects - Stone, Apple Computer, Inc.*
3. *Rush Hour - Hastings*
4. *Paris Dakar 90 - Guiot, VideoSystem*
5. *Earthtecture Sub-I - Sawai, Plus One, Inc.*
6. *The Effects of Forces, Masses & Springs on Airborne Typography - Berson, Design/Effects*
7. *Tribune Broadcasting Group Christmas ID Berson, Design/Effects*
8. *Scenes from CPUAX, GaAs, INFO - Henry*
9. *One Night - Ono, High Tec. Lab. Japan Inc.*
10. *Open Road - Hoeg, Post Effects*
11. *Kiddipick Television Commercial - McIntosh, Pixel Perfect*
12. *Pepsi Power Hour - Price*
13. *CGI Demo #4 - Winkler, Post Perfect, Inc.*
14. *Face - King*
15. *Calibre Digital Design Compilation Reel - Cosenzo, Calibre Digital Design, Inc.*
16. *1990 NAMCO - Watanabe, NAMCO CG Project*
17. *sfpg-Selected Graphics - Wills*
18. *Very Few Pixels -Very Few Pixels*
19. *ACM SIGGRAPH "Exploring the Limits" - ACM SIGGRAPH*