

• Across From
Valley River Mall

ULLR
SKI SHOP

1811 Valley River Dr. 683-1977

STUFF IT
AN ENTRIY

Homemade Food • Reasonable Prices
Fast Service • Smokey's Dining

1219 Alder St 343-3062

ALL MAJORS WELCOME

ESCAPE Field Studies Program is now recruiting for Winter Term Coordinators. You will gain valuable leadership training and experience, also 3-5 upper division credits.

Stop by M 111 EMU or phone 686-4351
Ask for Diane or Doris

**High Quality
COPIES**

3¢

All Day
★
Every Day
Collating
Binding

Open
8:30-8:30 M-F
10-6 Sat, 4pm-8pm Sun

Print America

519 E. 13th
485-1940

Oregon Daily Emerald ODE Oregon Daily Emerald ODE Oregon Daily Emerald ODE
Oregon Daily Emerald ODE Oregon Daily Emerald ODE Oregon Daily Emerald ODE
Oregon Daily Emerald ODE Oregon Daily Emerald ODE Oregon Daily Emerald ODE

**Cosmic strings might explain
mystery of irregular universe**

By Stan Nelson
Of the Emerald

Astronomers have tried unsuccessfully for years to answer the fundamental question of why the universe is unbalanced, with some regions of the cosmos crowded with clusters of galaxies millions of light-years across while even larger bodies of space seem to be empty of matter.

Experts initially believed the condition was a result of irregularities in the big bang that formed the universe roughly 18 billion years ago. However, through the use of radio telescopes to measure relic radiation from the explosion, it has been found that the blast was uniform and would not account for the lumpy nature of the universe, said Robert Zimmerman, University physics professor and member of the Institute for Theoretical Science.

The answer may be found in a new theory presented by two Princeton scientists, Jeremiah Ostriker and Edward Witten, and graduate student Chris Thompson in November of this year that combines two independent physics theories as an explanation for the non-uniform nature of the universe.

In their report, the team suggests the pressure from electromagnetic radiation, created from dense hypothetical entities of pure energy called cosmic strings, might be responsible for making the universe non-uniform.

The strings are believed to be thinner than an atomic nucleus, as long as the universe is wide and so dense that a mile-long segment would weigh as much as the earth.

The pressure from the field forces matter outward, leaving voids of matter in space and causing the formation of bubbles of matter along the outside edges, according to the theory. At the edges of the bubbles the congregated matter would allow galaxies to form.

If correct, the theory will change the knowledge of physics as significantly as the study's transition from classical to quantum

physics, Zimmerman said.

The theory is important as it combines cosmology, the study of the origin and structure of the universe, with elementary-particle physics, the study of the elementary forces in nature, he said.

Both fields have acquired a tremendous amount of knowledge, and if the theory proves true, it will allow scientists to combine the data from both fields to explain other celestial phenomenon, he said.

A new idea develops in elementary-particle physics every 10 years, and a new idea develops in cosmology every 20 years, Zimmerman said.

The big bang would have created a high enough level of energy to break symmetries in nature, and when that occurs, imperfections in space and time occur, Zimmerman said. When the cosmos began to cool, a phase transition occurred analogous to the surface of a pond freezing, he said.

Just as chunks of ice forming on the surface of a pond develop fractures before solidifying into a solid sheet of ice, so might the universe have developed flaws in the form of strings, Zimmerman said.

The strings also would have the potential to act as superconductors that could have the effect of a giant magnetic field and sweep clean entire regions of the galaxy, pooling the matter into bubbles around which galaxies are often found, Zimmerman said.

Cosmology has no exact definitions for particular phenomenon though ideas that explain the phenomenon might be widely accepted, said James Isenberg, assistant mathematics professor and ITS member.

The theory is still in its infant stage, and most of the calculations are not well defined, Zimmerman said. Before the theory becomes a reality though, there needs to be direct observational proof, he said.

This could occur with the observation of the gravitational lens effect, where light is bent around the opposite sides of a cosmic string.

**Introducing the
Blazer AT**



STANDARD FEATURES

- 80286 Processor
- 5MHz-8MHz switchable clock speeds
- 1 Megabyte RAM
- 5 1/2" floppy disk drives
- Clock/calendar with battery backup
- Hercules II compatible monochrome graphics
- Ergonomically designed monochrome monitor with swivel base, 35% larger screen than IBM

20 Meg Hard Drive System
NOW ONLY \$2695

OPTIONS • 30-40 to 60 Meg Hard Drives (40 ms Access Time) • RAM expandable to 10 Megabytes • EGA monitor and adaptor

**Your hometown
computer company.**

ECI EMERALD COMPUTER
INTERNATIONAL

540 OAK STREET • EUGENE • 343-9393

- Great adventure
- Unique learning opportunity
- Choice opportunity to earn high dollars

**BE A NEW YORK
AREA NANNY**

You'll live in with one of New York's top and most respected families. Care for warm, loving children. Enjoy your own room, free travel, free board. All without paying any fees.

What's more... You will experience the New York lifestyle... and share it with others like you who have traveled East to earn and learn.

We invite you to qualify for the immediate openings now available. To be considered, you must:

- be of good moral character
- be stable-minded
- be child-oriented
- be work-motivated and ready to spend at least one year in the New York area.

Child care or other health care related experience and education a must.

Come share the excitement!
Be a New York Nanny!

Call 1-800-443-6428
or write directly to



Arlene Streisand, Inc.

We know and care.

215 Park Avenue South
Suite 1301
New York, NY 10003

"A licensed child care personnel service"

Et al.

Pi Mu Epsilon will sponsor a talk given by Steve Myers titled, "So what do you do with a degree in math?" tonight at 7:30 in 106 Deady. All are invited.

The National Student Exchange will hold an introductory meeting today at 10:30 a.m. in Room 110 EMU.

Vice President John Moseley will address the Faculty Senate today at 3:30 p.m. in 338 Gilbert on the administration position regarding the Riverfront Research Park.

The public is invited to the EMU Christmas Crafts Fair Dec. 10-12 from 10 a.m. to 5 p.m. in Room 167 EMU. Handmade items by local artists and crafts-people will be on sale. There will be crafts demonstrations and entertainment by local performers and free hot cider.

The University art department will have a booth at the EMU Christmas Crafts Fair and student works in ceramics, printmaking, weaving and jewelry will be offered for sale. A portion of the proceeds for the sale will go to the LaVerne Krause Scholarship Fund, the Jan Zach Memorial Award and toward the purchase of paper-making equipment for the art department.

Deadline for submitting Et als to the Emerald front desk, 300 EMU, is noon the day before publication. Et als are run only once. Events with a donation or admission charge will not be considered.