

# High on the sky

## Teen's passion for astronomy has him on a career path

**By Bruce Lieberman**

UNION-TRIBUNE STAFF WRITER

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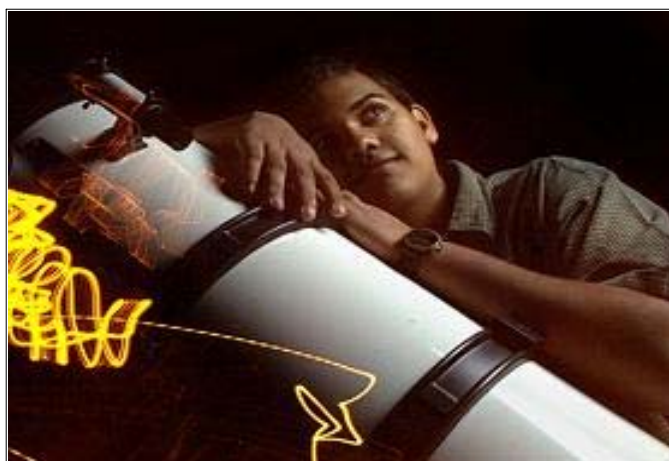
Harish Khandrika, a 15-year-old junior at La Jolla High School, wants to be an astrophysicist someday, but his name is already up in the stars.

Orbiting the sun is Minor Planet (12068) Khandrika, an asteroid discovered by the Lincoln Laboratory at the Massachusetts Institute of Technology and named in honor of the teen after an essay contest last year.

Harish is one of 900 students in this year's 49th annual Greater San Diego Science & Engineering Fair. Last year at the fair, he won the top prize in his division. At an awards ceremony last night,

Harish was a runner-up but still won a trip to New Zealand, where he will exhibit his astrophysics project this fall at the national science fair there.

Like many students at his competitive high school, Harish is busy. While carrying a



JOHN GASTALDO / Union-Tribune

Harish Khandrika, 15, a La Jolla High student and a past winner of the Science Fair, posed with his reflecting telescope. The lights near his telescope are from exposure of a nearby street light.

### SCIENCE FAIR 2003

#### Science Fair

Awards: Behavioral / Social Science to Environmental Sciences.

#### Science Fair

Awards: Mathematics to Consumer Science / Product Testing.

Sweepstakes Awards: Trip Sweepstakes (Senior Division) to SAB Honor Society Award (Junior Division).

#### Professional Categories

Awards: Acoustical Society of America, San Diego Chapter to Zoological Society of San Diego.

load of college-level courses, he helps organize the science fair, competes in his school's science club and volunteers at the San Dieguito River Park and San Diego Humane Society.

But his passion is astronomy. The walls of his bedroom are covered with posters of planets, nebulae, galaxies and star charts. He's eager to trek to the desert for a night under the stars with a telescope his parents recently bought for him.

Ask him about his beloved subject, and Harish jumps excitedly from one topic to the next, from the strange physics of black holes and pulsars to the origins of life and the possibility that it might exist elsewhere in the universe.

"The black hole itself is very mystifying," Harish said of one of modern astronomy's most vexing subjects – a collapsed star whose mass is so great that its gravitational field consumes everything near it, even light.

"It defies all – it just takes away all the theories that were ever created by physicists and chucks them into the trash can," Harish said, his voice quickening.

"It's just so cool."

Harish, whose hero is famed scientist Stephen Hawking, has the next decade all planned: An undergraduate education at UC Berkeley, where he'll join the university's renowned astronomy department; then graduate school at Caltech.

He said he wants a career that tackles the biggest questions: Where did we come from? How was the universe formed? What is its fate?

"When I think about how stars create all the elements in the periodic table and create life itself, it's amazing to know that we're all stardust," Harish said. "We came from some star."

Harish's project this year is called "Studies on the High Mass X-ray Binary Pulsar GX 301-2." Using satellite data obtained from UCSD's Center for Astrophysics and Space Sciences, the project examines the characteristics of a neutron star and its companion, a huge star named Wray 977.

Working for months with astrophysicists at UCSD, Harish studied the pulses of X-ray energy emitted from the distant pulsar, describing its behavior as it orbits its companion star.

"With little oversight from me, Harish dove into the data," said Richard Rothschild, an astrophysicist at UCSD and Harish's mentor on the project.

"He picked things up pretty fast and seemed to work on his own pretty well once he kind of got in gear," said William Heindl, another astrophysicist at UCSD who helped Harish with some of the computer programs needed to analyze the satellite data.

"There's a pretty steep learning curve with something new like this, especially when you're a high school student, and he's studying things that we as professional scientists are working on," Heindl said.

"It's pretty impressive for him to even be able to get his mind around some of the concepts and make real contributions."

Harish, who immigrated to the United States from India when he was 7, discovered his interest in astronomy as a boy. He said he was first drawn to the subject when a teacher in elementary school posted photos of rockets on the classroom wall. Then, during a trip to visit his uncle in India, Harish picked up a book by Hawking. He was hooked.

"Any time there was a discussion about the stars and the universe, he started talking so much about it," said his mother, Geetha. "I wondered, where did he get the information? . . . I mean, it's so hard to make him read anything else."

Harish's physics teacher at La Jolla High, Martin Teachworth, said he has to be on guard for the teen in class.

"He's a real quiet kid, but man, he knows his astronomy," Teachworth said. "If I'm saying something, I have to be really careful not to make a mistake."

Harish's parents said they are heartened to see him so enthralled with a subject on which he can build a career.

Some people have joked that Harish will likely win more money from science contests than he will earn in astronomy – a field not exactly paved with riches.

"He said, 'Look, this is what I want to do.' " his mom said. "What we told him is follow your heart. You have to get up every day and go and do something that you want to do."

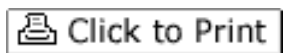
This year's major sponsors of the fair include *The San Diego Union-Tribune*, Qualcomm, Pfizer, the San Diego County Water Authority, the Biomedical Research Institute of America, the Reuben H. Fleet Science Center, Intel and Balboa Park.

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