

The Final Frontier: Space, Science and Technology

A program of the Springfield Public Forum & the Springfield City Library



Program Overview:

- Award Winning Speakers
- Family Fun Day at the Springfield Museums
- Movie Screenings
- Student Video Contest
- Springfield Stars Club Space Activities
- Robotics Demonstrations with FIRST Student Teams
- Kids Activities @ the Library

More details and dates on page 2 of the guide!

"This is a journey into the unknown, something completely new..."

Mars Scientist Steven Squyres, who will speak at the Public Forum 10/24



Dr. Ronald Mallett, City Thinks Kick-Off Speaker. Details on page 3. (photo courtesy of D. Mallett)

Outer space has long been characterized as **The Final Frontier**: the place which still contains new mysteries to be unraveled, new discoveries to be made. It has fascinated humans throughout our history, and been the subject of study, speculation, arts and literature. The exploration of space has involved many scientific fields, ranging from geology and physics to robotics to chemistry, all employed in the pursuit of understanding.

The 2010 City Thinks programming investigates all of these aspects of space exploration. With activities ranging from a Springfield Stars Club presentation on Mars and a Family Fun Day at the Springfield Museums, to movie screenings, book discussion groups and a student video contest on the future of scientific discovery in space, there is something for everyone.

The City Thinks programming begins on October 5th at 6:15 p.m., with a public reception, lecture and discussion with



Physics Professor Ron Mallett, whose book, "Time Traveler" examines the process of scientific discovery in pursuit of developing a time machine.

The programming culminates in the October 24th Public Forum lecture with the Mars Rover Lead Scientist Steven Squyres. The Mars Rover expedition has been one of the most successful of our space exploration projects. Involving years of planning and robotics engineering, the Mars Rovers Spirit and Opportunity have outlasted their projected lifespan of 90 days by several years. Their exploration of the Red Planet has broadened our understanding of the composition of Mars, the development of our universe, and the

possibility of a Mars colony in the future.

Dr. Squyres will give us the "inside scoop" on the Mars Rover and the exploration of space in his multimedia, family-friendly presentation. This lecture will be preceded by a small group discussion with Dr. Squyres for students and educators, as well as demonstrations with FIRST student robotics teams, serving as a terrific end to the 2010 City Thinks program.

Join us for the City Thinks! Become inspired, learn more and share what you think about the present and future of space exploration!



Mars Rover in action

Public Forum Speaker for 2010 City Thinks: Dr. Steven Squyres

Steven W. Squyres, the Lead Scientist on the Mars Rover Expedition, is also the Goldwin Smith Professor of Astronomy at Cornell University in Ithaca, New York. His research area is in planetary sciences, with a focus on large solid bodies in the solar system such as the terrestrial planets and the moons of the Jovian planets. He is the recipient of the 2004 Carl Sagan Memorial Award and the 2009 Carl Sagan Medal for Excellence in Communication in Planetary Science.



Dr. Steven Squyres

Squyres has participated in many of NASA's planetary exploration missions, including the Voyager mission to Jupiter and Saturn, the Magellan mission to Venus, and with the Near Earth Asteroid Rendezvous mission. He is also a co-investigator on the 2003 Mars Express and 2005 Mars Reconnaissance Orbiter missions, a member of the Gamma-Ray Spectrometer Flight Investigation Team for the Mars Odyssey mission, and a member of the imaging team for the Cassini to Saturn. Squyres recently served as Chair of the NASA Space Science Advisory Committee and as a member of the NASA Advisory Council.

Squyres received his Ph.D. from Cornell in 1981 (where he was a student of Carl Sagan). He received the H. C. Urey Prize from the Planetary Division of the American Astronomical Society in 1987. In 2007, he was awarded the prestigious Benjamin Franklin Medal in Earth and Environmental Science by the Franklin Institute.

2010 City Thinks Schedule:

All events free to the public unless noted otherwise.

Date/Time	Event	Location (all events take place in Springfield unless noted)
9/25, 1:30-5	Student Video Contest Recording Session. Open to all students submitting a video for the contest, first come, first serve. Please be prepared to do your presentation; 10 minute time slots available. Winners receive a PeoplesBank Scholarship to U.S. Space and Rocket Center Space Camp. www.spacecamp.com	Springfield Central Library, 220 State St.
10/1, 7:30 p.m.	Springfield Stars Club presents Stars Over Springfield: Mars Presentation and Telescope Viewing (weather permitting)	Springfield Science Museum, 21 Edwards St. (\$3 adults, \$2 children)
10/2, 1:00 P.M.	City Thinks Film Series: Time Travel at the Movies. Call the City Library for details	Springfield Central Library, 220 State St.
10/5, 6:15 reception, 7 p.m. lecture	2010 CITY THINKS KICK-OFF EVENT: Lecture and reception with Dr. Ron Mallett, UCONN Physics Professor and author of <i>Time Traveler</i> <i>"Time Travel: Possibility, Discovery and Promise"</i>	American International College, 1000 State St. Karen Sprague Cultural Arts Center West Wing
10/12, 7 p.m. -9:30 p.m.	City Thinks Film Series: <i>Star Trek</i> with a discussion on the Philosophy of <i>Star Trek</i> featuring Elms College Professor Jason Murphy	American International College, 1000 State St. Breck Building, Room 108
10/12 12 p.m.	City Reads, a book discussion: <i>Time Traveler</i> , by Ron Mallett	Springfield Central Library, 220 State St.
10/16, 2 p.m.– 4 p.m.	City Thinks Film Series: <i>Roving Mars</i> Documentary Screening	Storrs Library, 693 Longmeadow St., Longmeadow
10/16, DETAILS BELOW	FAMILY EXPLORATION DAY AT THE SPRINGFIELD LIBRARIES AND MUSEUMS, INCLUDING SPACE, ROBOTICS AND SCIENCE PROGRAMMING	Springfield Central Library, 220 State St./Springfield Museums, 21 Edwards St.
10/16, 9 a.m.-5 p.m.	Space-related Scavenger Hunt for children ages 5-12: Drop in activity with prizes for those who participate	Springfield Central Library, 220 State St.
10/16, 1:30 p.m.	Space-themed Story Time: ages 3-8, siblings welcome	Springfield Central Library, 220 State St.
10/16, 1 p.m.	City Thinks Film Series: Time Travel at the Movies. Call the City Library for details	Forest Park Branch Library, 380 Belmont Ave.
10/16, 12 p.m.-5 p.m.	Family Fun Day, Springfield Museums: Radical Robots	Springfield Museums, 21 Edwards St.
10/18-10/22	City Thinks Film Series: <i>Roving Mars</i> Documentary Screenings	Various School Systems
10/18, 7 p.m.	City Reads, a book discussion: <i>Time Traveler</i> , by Ron Mallett Facilitated by John Dayton, Ph.D., American International College Physics Department Chair	American International College, 1000 State St., Bradley Room, Schwartz Campus Center
10/20, 6 p.m.	City Reads, a book discussion: <i>Time Traveler</i> , by Ron Mallett	Central Library, 220 State St.
10/23, 1 p.m.	City Thinks Film Series: Time Travel at the Movies, Call the City Library for details	Forest Park Branch Library, 380 Belmont Ave.
10/24, 2 p.m.	CULMINATING LECTURE: MARS ROVER SCIENTIST STEVEN SQUYRES, Ph.D. with FIRST student robotics teams demonstrating robotics technology. Small student discussion group with Dr. Squyres preceding the lecture; to reserve space for the discussion group, please email canavan_patricia@yahoo.com	Springfield Symphony Hall, 34 Court St. Family-friendly, multimedia event!
10/26, 7:30 p.m.	Springfield Stars Club monthly meeting: Quasars	Springfield Science Museum, Tolman Auditorium, 21 Edwards St.
10/27, 6 p.m.	City Reads, a book discussion: <i>Time Traveler</i> , by Ron Mallett	East Forest Park Branch Library, 122 Island Pond Road.
10/27 6 p.m.	Meet author of <i>Munzuo in the Calling of the Sun Prince</i> Keshawn Dodds. <i>Munzuo</i> is a sci-fi/fantasy book for ages 9+, its main character is a superhero raised in Springfield who protects the Universe!	Central Library 220 State St.
10/28, 6 p.m.	City Reads, a book discussion: <i>Time Traveler</i> , by Ron Mallett	Forest Park Branch Library 380 Belmont Ave.
Ongoing	Student Video Contest: "What is the future of Space Exploration?" 6 PeoplesBank Scholarships to U.S. Space and Rocket Center Space Camp in Huntsville, Alabama (www.spacecamp.com) awarded to the winners. For application and guidelines, please visit www.springfieldpublicforum.org/2010citythinks , www.springfieldlibrary.org or www.bankatpeoples.com/spacecamp	Submission deadline: September 30, 2010. Videos and applications can be dropped off at any PeoplesBank location or Springfield City Library, 220 State St., or mailed to Springfield Public Forum.



City Thinks 2010 Student Video Contest

Win a PeoplesBank Scholarship to Space Camp in Huntsville, AL

What is the future of space exploration?

Mars Scientist Dr. Steven Squyres said that the Mars Rover project was a “journey into the unknown, something entirely new”. Scientific discoveries require imagination and factual knowledge and are influenced by your life experiences, art, literature and research. Investigate current and future plans for space exploration, and use your imagination and knowledge to develop a presentation on what should be our next “entirely new journey into the unknown”.

In developing your video presentation in response to this question, research past, current and future space exploration plans and decide what your recommendation would be for mankind’s next venture in space. Please include:

- * Specific support for your idea; why do you think this will work? Cite the research you’ve done.
- * Why have you chosen this particular idea as the best focus for our space exploration efforts?
- * How can we prepare current and future scientists to tackle this challenge?

Contest Guidelines:

- There will be 3 grade categories for this contest: 6th-8th, 9th/10th, and 11th/12th.
- In preparation for your project, you can investigate the various links and articles on the Public Forum’s website, as well as do your own research. All entries should be accompanied by a bibliography of sources that you used.
- Video presentations should be 1-2 minutes long, and will be judged on content/knowledge of topic, organization, originality of idea, clarity of speech. Speeches longer than 2 minutes will be disqualified.
- Video presentations must be in digital format and copied onto a DVD. Videos, bibliographies and completed submission forms must be submitted by Thursday, September 30, 2010 at 5 p.m. They can be brought to any PeoplesBank office or the Springfield Central Library, 220 State St., Springfield, or mailed to the Springfield Public Forum, P.O. Box 5374, Springfield, MA 01101.
- The 6 winners will be notified by Friday, October 15th. They will receive a PeoplesBank scholarship to Space Camp in Huntsville, AL. 15 runners-up will receive a copy of “Roving Mars: Spirit, Opportunity and the Exploration of the Red Planet” by Steven Squyres.

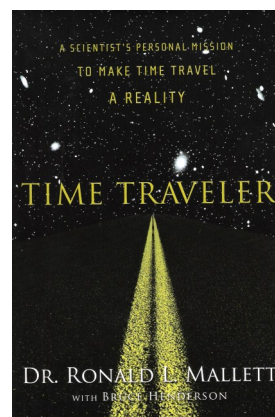
For complete rules and details, and an application form, please visit www.springfieldpublicforum.org/citythinks2010 or www.bankatpeoples.com/spacecamp.

Many thanks to PeoplesBank for the Space Camp Scholarships.



City Thinks Book: “Time Traveler” by Dr. Ronald Mallett

“Time Traveler: A Scientist’s Personal Mission to Make Time Travel a Reality” is an account of Dr. Ronald Mallett’s journey as a scientist: the art, literature and science that influenced him, the process of research, innovative thinking and discovery, the role of personal experience in developing his life’s passion. It is also the story of perseverance against the odds, as “this working-class African-American boy from the Bronx stuck with his vision, struggling with poverty and prejudice to become one of America’s first black PhDs in theoretical physics.” (*Time Traveler*) “A story for scientists and non-scientists alike, “Time Traveler” is an inspirational text for aspiring young scientists” (*Publisher’s Weekly*).



Professor Ronald L. Mallett received his B.S., M.S. and Ph.D. in physics from the Pennsylvania State University, initially putting himself through school on the G.I. Bill. He worked for United Technologies from 1973-75, and in 1975 joined the physics faculty at the University of Connecticut in Storrs, where he has been a professor of theoretical physics ever since.



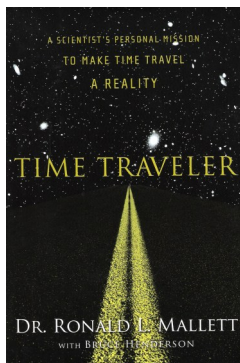
Professor Ronald Mallett

(Photo courtesy of Robert Parkey III)

Prof. Mallett has published numerous papers on black holes and cosmology in professional journals. His breakthrough research on time travel has been featured extensively in the media around the world, including print media such as *New Scientist*, *the Village Voice*, *the Boston Globe*, *the Boston Phoenix*, *the Hartford Courant*, *Rolling Stone magazine*, *Pravda (Moscow)*, *The Wall Street Journal*, and broadcast media such as NPR’s *This American Life*, the History Channel, Science Channel, Learning Channel, the National Geographic Channel and NBC’s *Today Show*.

Professor Mallett’s recently published memoir “Time Traveler: A Scientist’s Personal Mission to Make Time Travel a Reality” has been translated into Korean, Chinese, Japanese, and is to be made into a feature film by Spike Lee.

Professor Mallett will be the 2010 City Thinks kick-off speaker, with a lecture, book-signing and reception at American International College on October 5, 2010 at starting at 6:15 p.m. in the West Wing of the Karen Sprague Cultural Arts Center. Open to the public.



Time Traveler Discussion Questions

"The process of scientific discovery is, in effect, a continual flight from wonder."

"Imagination is more important than knowledge. Knowledge is limited. Imagination encircles the world."

- Albert Einstein



- Do you think that new scientific discoveries can require both imagination and bravery to present to the world? Discuss this in terms of Ron Mallett's project as well as other past scientific developments.
- The concept of probability and parallel universes are some of the most important aspect of quantum mechanics (p. xii, p. 194). Do you think parallel universes exist? Why or why not?
- What were Ron Mallett's formative experiences through young adulthood? How did these influence his later life?
- Consider the influence of various art forms on scientific development (books, paintings, movies, television shows). What were some of the elements of arts and culture that influenced Mallett, or other scientists? (p. 14, 19, 50, 59, 122, 173)
- Ron Mallett notes, "my vastly different experiences in algebra and physics prove the value of inspiring teaching, and the positive impact on an impressionable student, as opposed to a lackadaisical teacher uninterested in lighting any fires...." (p. 29) Discuss; do you agree or disagree? What has been your experience?
- While Dr. Mallett received an excellent formal education, he also took the initiative to educate himself. He notes, "in preparing myself to be a knowledgeable, scientific person, I read constantly." (p. 43) Discuss his efforts at self-education. How important were they in his development and career?
- Dr. Mallett was shaped by his experience as an African-American (p. 62, 160-161). He felt that "he might find protection from prejudice by utilizing my skills and talents in a way that would make it difficult for bigots to get to me." (p. 45) Consider this comment, and his experiences in light of today's society.
- What do you think about the concept of time reversal? (p. 78)
- How do Ron Mallett's research, knowledge of past and current theories and discoveries, and interaction with colleagues influence his work and thinking? (p. 96, 137, 149, 181-182)
- Do you believe in worm holes? (p. 145)
- Discuss the inter-relationship between, and importance of, theoretical and experimental science (p. 165).
- One of the most difficult concepts Mallett works with in developing his time travel idea is that of Einstein's gravitational field equations. How is Mallett's solution of this equation critical to his work? (p. 167-170)
- As Dr. Mallett continues with his research, he realizes that the time machine he designed would not allow him to go back in time to visit his father (p. 173). As this was originally one of his primary motivations, why does he continue his project? What are the next steps?
- On page 192, Dr. Mallett poses a critical question asked by Stephen Hawking and others: "If time travel into the past became possible at some future date, why haven't we received time travelers from the future?" Do you agree/disagree with Dr. Mallett's explanations?
- The implications of time travel are fascinating. Discuss the Grandfather Paradox (p. 193), which is also reflected in the Ray Bradbury story, "The Sound of Thunder," referenced on page 19. What are possible resolutions to the Grandfather Paradox?
- Dr. Mallett writes that "the loss of my father at an early age could have badly derailed me. As it was, I became withdrawn, and a habitual truant.... (however) my dream helped keep me out of the state pen (penitentiary) and into Penn State (University)." Comment on the importance of dreams and goals in helping young people stay on track.

Children's Booklist

(For a complete reading list on space- and science-related themes, please visit www.springfieldpublicforum.org/2010citythinks or www.springfieldlibrary.org)

- * Miller, Claudia. *How Oliver Olson Changed the World*
- * Hawking, Lucy and Stephen. *George's Cosmic Treasure Hunt*
- * L'Engle, Madeline. *A Wrinkle in Time*
- * Ocampo, Adriana. *Space Rocks*
- * Krull, Kathleen. *Isaac Newton*
- * Landry, Leo. *Space Boy*
- * Lopez, D. *Amazing Solar System Projects You Can Build Yourself*

For more educational resources on this and all Public Forum topics, please visit www.springfieldpublicforum.org.

- ◇ *Springfield Stars Club website: <http://www.reflector.org/>*
- ◇ *Information about the Solar System: <http://www.jpl.nasa.gov/solar-system/index.cfm>*
- ◇ *Mars Information: http://www.nasa.gov/worldbook/mars_worldbook.html*
- ◇ *NOVA Mars website: <http://www.pbs.org/wgbh/nova/mars/index.html>*
- ◇ *Robotics technology on Mars: <http://www-robotics.jpl.nasa.gov/>*
- ◇ *Fun Kids' Website about Mars: <http://marsprogram.jpl.nasa.gov/participate/funzone/>*
- ◇ *Passport to Knowledge website about the Mars Rover Expedition: <http://passporttoknowledge.com/mars/>*
- ◇ *NASA Mars Rover Website: <http://marsrovers.jpl.nasa.gov/home/index.html>*
- ◇ *The latest images from Mars: <http://www.marsquestonline.org/mer/>*
- ◇ *Mars Resources for Educators: <http://marsrovers.jpl.nasa.gov/classroom/>*
- ◇ *Scientific American article about Mars Rovers and Steven Squyres <http://www.scientificamerican.com/article.cfm?id=father-of-spirit-and-oppo&ref=sciam>*
- ◇ *Muscles on Mars, a CBS article: http://www.cbsnews.com/8301-504763_162-20014226-10391704.html*
- ◇ *Google Map of Mars: <http://www.google.com/mars/>*
- ◇ *Chronology of Mars Exploration: <http://history.nasa.gov/marschro.htm>*
- ◇ *NPR interview with Steven Squyres, Ph.D. <http://www.npr.org/templates/story/story.php?storyId=1799056>*
- ◇ *NOVA interview with Steven Squyres, Ph.D. <http://www.pbs.org/wgbh/nova/mars/mission.html>*
- ◇ *Is Time Travel Possible? Today Show Interview with Ron Mallett :http://www.huffingtonpost.com/2009/09/09/is-time-travel-possible-a_n_280388.html*
- ◇ *CNN Interview with Ronald Mallett on youtube: <http://www.youtube.com/watch?v=GHC8z6ULs18>*
- ◇ *Dr. Ronald Mallett's professional papers: <http://www.phys.uconn.edu/~mallett/main/papers.htm>*
- ◇ *National Geographic Video: Time Travel, Wormholes and Interstellar Travel <http://www.youtube.com/watch?v=SafwXdP7ylc&feature=fvw>*

The Springfield Public Forum and the Springfield City Library, in collaboration with local schools, colleges, artistic and cultural institutions, present The City Thinks. The objective of the City Thinks is to offer opportunities for education and dialogue on the pressing issues of our time, to all in our community. This is accomplished through a variety of programming, with support from the American International College Honors Program and Unity First, as well as our members, sponsors and collaborative partners. The Steven Squyres lecture is co-sponsored by MassMutual Financial Group and PeoplesBank. PeoplesBank is also offering the scholarships to Space Camp; many thanks.

Celebrating our 75th anniversary in 2010, the Springfield Public Forum remains one of the few surviving lecture series in the nation offered at no charge to the public. Each year, the Public Forum brings an incredible array of nationally-known experts and commentators to our community for lectures, discussion groups and related programming.

For nearly 150 years, the Springfield City Library has provided public library services to area residents. Using state-of-the-art technology, the Library provides free and easy access to information and the opportunity for lifelong learning through a variety of programs and services. We are pleased to be able to work with other civic organizations to implement city-wide activities that engage a broad cross-section of the community.

Special Thanks To:



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