

STEM Society Meeting, August 11, 2015

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1 About the STEM Society and the STEM Society Website

STEM is an abbreviation for Science, Technology, Engineering and Mathematics. The acronym STEM is commonly associated with K-12 education, but our use of the term is only slightly bound to this meaning. There are over one hundred people on the mailing list, although a much smaller group attends any one meeting. We meet on the second Tuesday of each month at the Trailside Center at 99th and Holmes in Kansas City, Missouri. The meetings are open to all. The start time is 6PM. We make presentations, have discussions, and have demonstration experiments. These relate to Science, the History of Science, Mathematics, Engineering, Philosophy and Technology at all levels. The topics have ranged from a technical discussion of the mathematics of General Relativity to scientific experiments for young students.

These meeting notes contain links to many other documents, which may be viewed or downloaded by clicking the link. A partial list of documents can be reached by clicking the heading **Documents**. The meeting notes may also be viewed in an archive file (archive.pdf), which is in the list of documents. Many of the documents are PDF files. They may be viewed or downloaded to the computer by clicking, provided Adobe Reader, or another program capable of reading PDF files, is present. There are many more documents available at the site than are listed under **Documents** because the documents.htm file is not at all up to date. The last time I checked, about March 2014, there were about 350 document files on the site. We are in the process of creating better techniques for finding documents and authors. The first meeting of the STEM Society was in November of 2006. For several years we used the content management program called Joomla. It had a fancy looking interface, but was hard to use. It overran the space somehow at our internet provider Bluehost. So we now have a very simple HTML site. It is not so slick looking as Joomla, but is very easy to maintain and modify.

The web site is:

<http://www.stem2.org/>

Direct to the documents list:

<http://www.stem2.org/je/documents.htm>

Direct to the archive file:

<http://www.stem2.org/je/archive.pdf>

2 The August Meeting Announcement

The August meeting of the STEM Society will take place on the second Tuesday of the month, August 11, 2015, at the Trailside Center at 99th and Holmes in Kansas City, Missouri. The starting time is 6PM.

Possible Topics:

- (a) I am working on a new book called **Computational Mathematics**. I can talk about that.
- (b) There are several interesting books that can be reviewed. Perhaps others can contribute an informal review also.
- (c) We have not heard much about visits to the Galapagos islands, seen pictures, and discussed the influence on Darwin?
- (d) We have presented a huge number of topics over the years, perhaps we should revisit some of them? Any suggestions?
- (e) I hope attendees choose to bring additional things, ideas, or presentations.

3 Bob Kessler: Discussion on Advances in Artificial Intelligence and Robotics

Kaplan refers to the AI thing as "synthetic intellects" and includes the stuff below...and in some cases talks about the addition of those capabilities along with the robotics stuff. Why not read his book and let me know what you think?

"Humans Need Not Apply: A Guide to Wealth and Work in the Age of Artificial Intelligence"...two classes...(1) marriage of sensors and actuators...robotics...(2) synthetic intellects, i.e., machine learning, neural networks, big data,cognitive systems, or genetic algorithms, among others...

AI is a bit different than when we were at AlliedSignal...and those networks and computers...

Kaplan Jerry, **Humans Need Not Apply: A Guide to Wealth and Work in the Age of Artificial Intelligence**, Yale University Press.

4 Rich Kauffman Discussion on Advances in Fusion Energy

Rich talked about new developments in Nuclear Fusion dealing with atoms of higher atomic weight such as lithium, beryllium, and even carbon. We also discussed Niels Bohr, the liquid drop model for fission, Leo Szilard and Einstein.

5 Rick Hynes and His Galapagos Island Visit

Rick came in with a Galapagos Turtle tee shirt, and was perhaps prepared to give a discussion with pictures. With all of our lengthy discussions, I unfortunately forgot about asking Rich to talk about this.

6 Steve Cummings and a Demonstration of a Cooling Jacket

The jacket designed for astronautics and pilots pumps cold water into the vest. Steve is using it in his vehicle as a substitute for a failed air conditioner. Also a machine for biofeedback to teach you to manipulate bodily functions with your brain. And he demonstrated several other gadgets.

7 Jim Emery and Geometric Constructions

<http://www.stem2.org/je/geomcon.pdf>

This may become the first part of a new book I am writing.

8 Book Reviews

We reviewed three books:

[1] Review by Jim Emery, **What is Mathematics?** by Courant and Robbins.

This is a wonderful book. For another excellent discussion of this book, see the review by Brian E. Blank, which appeared in the December 2001 edition of the **Notices of the American Mathematical Society**, and which can be found on the internet:

<http://www.ams.org/notices/200111/rev-blank.pdf>

[2] Review by Jim Emery, **Hilbert and Courant** by Constance Reid.

[3] Review by Bob Kessler, **Humans Need Not Apply: A Guide to Wealth and Work in the Age of Artificial Intelligence** by Kaplan.

Bob Kessler also talked about other Artificial Intelligence books and Robotics including a lecture course on DVD, which he is willing to lend out. This is **Robotics** by the Learning Company.

9 Greg Hodes Led a Discussion About Philosophy, Plato, and Positivism

10 Review of Last Months Topic About the Mathematics of Music

Several present had not been at last months meeting.

<http://www.stem2.org/je/musicmath.pdf>

11 Jim Boyle, Jim Emery, and Charley Mentenana Talked About Control Data Corporation

The CDC6600 is considered to be the first supercomputer. CDC was a spinoff of Univac in Minneapolis. Seymour Cray was one of the founders and the chief architect. The 6600 still had magnetic core memory and featured a 60 bit word. CD2000, a renaming of AD2000, was one of the first CAD/CAM systems and was a product of CDC. Most of the early such systems were derived from systems first designed by Patrick J. Hanratty, who is considered the father of CAD/CAM.