

STEM Society Meeting, May 9, 2017

James Emery

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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.

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 May 9, 2017 Meeting Announcement

The May meeting of the STEM Society will take place on the second Tuesday of the month, May 9, 2017, at the Trailside Center at 99th and Holmes in Kansas City, Missouri. The starting time is 6PM. Also look at our website for past meeting notes:

The web site is:

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

Possible Topics and Discussions:

(a) James Emery: Experimental Mathematics. I shall look at testing trial speculations for evidence that they are true in general. This is a form of empirical mathematics. Some of the material will come from the books

Strachan Liz, **A Slice of Pie**, Fall River Press, 2010.

Pappas Theoni, **The Joy of Mathematics**, Wide World Publishing/Tetras, 1989.

We shall look at evidence that claims are true by making plots and using graphics, testing examples, by paper folding, and so on. Some of the topics are:

Approximation Theory, Experimenting With Weirdness, Sexual Numbers, Paper Folding, The Seven Bridges of Königsberg, Analysis Situs, Topology, and Pythagoras by Experiment.

(b) James Emery: Particle Accelerators. I have become interested in particle accelerators and the relativistic mechanics needed to design them.

Nuclear Physics books are a source of information. I have many such books. I have been studying older books such as Kaplan's "Nuclear Physics." These books are interesting historically. And I have been looking at newer books such as "Theory and Design of Charged Particle Beams," by Martin Reiser.

(c) We need contributions by others this month.

3 David Levy and the Eclipse

Linda Hall Library: May Hedgehog Express

Bus trip from Linda Hall Library to view the total eclipse in St Joseph, MO.

<https://us-mg6.mail.yahoo.com/neo/launch?.rand=emg3k0c476a57#6964361589>

4 Experimental Mathematics

The document presented on this topic needed some proof reading and correcting with some additions, and is now available as

[/stem2.org/je/expmath.pdf](http://stem2.org/je/expmath.pdf)

Here is the table of contents for *Experimental Mathematics*.

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5 Irene and Norton Starr

Irene Starr attended the May meeting and presented some interesting material.

Some may remember the interesting exhibit of wooden mathematical puzzles exhibited at Linda Hall Library in May of 2015. This featured puzzles designed and made by Stewart Coffin. Coffin has a book or two about his work, and I remember obtaining one of his books from some library, at the time. But do not now remember where I found this book. Norton is a collector of such puzzles. Most of the exhibit at Linda Hall Library was from his collection. I recently visited Linda Hall and asked if there were pictures of the puzzles, held by the library, but apparently they have none.

Norton Starr and Irene Starr are Kansas City natives who spent a good part of their lives in New England, many of them at Amherst College. Norton was a professor of Mathematics at Amherst for many years, and I think Irene also taught Mathematics, Physics, and Computer Science. She now does computer consulting. There was an article about the Starrs in the Kansas City Star:

May 10, 2015 7:00 AM kc star about the wood puzzle exhibit at Linda Hall Library; Stewart Coffin, Norton Starr.

Irene showed me an online mathematical puzzle created by the Starrs. Search for Norton Starr on the internet. Here is information from Irene's card:

Irene Starr ics@starr.net
913-725-0133
keybordhelp.net
Computer Consulting.Math Tutor
Downsizing(starr.net/is/stuff)

6 Relativity

We ran out of time and did not get to this topic.