

# STEM Society Meeting, February 10, 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 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 February Meeting Announcement**

The February meeting of the STEM Society will take place on the second Tuesday of the month, February 10, 2015, at the Trailside Center at 99th and Holmes in Kansas City, Missouri. The starting time is 6PM.

Topics:

(a) Rich Kaufman will talk about DNA and the DNA Learning Center. This Learning Center features A wide variety of online DNA resources as well as information on many workshops, field trips, courses, and products from the Cold Spring Harbor Laboratory. Rich thinks that it would be very good to mimic this Center in Kansas City.

(b) Kent Smith will attempt to convince people to enrolle in an online class from Purdue titled **Organic Electronic Devices**. The subject sounds interesting, however, I am not a fan of online learning or testing. So convincing me might prove a hard task. There is a short video introduction to the class, which I am so far unable to view with my computer.

(c) Jim Emery: Computations involving the sextant, and a demonstration of using the sextant for determining longitude.

(d) Jim Emery: A brief introduction to the Stern-Gerlach experiment, which demonstrated the necessity of the quantum electron spin, and introduced a type of quantum weirdness.

(d) Tech Week next fall in Kansas City.

Tech Week has been held in Los Angeles, New York, Chicago, Detroit, Miami, and now this year in Kansas City September 14 - 20, 2015. Techweek is the nations leading technology conference and festival. Tasked with the mission of showcasing local innovation, Techweek gathers established industry heavyweights and leaders of the future in 6 emerging tech hubs. I have invited Hal Gottfried of the KC Open Hardware Group to talk about this "Tech Week in KC" through an email.

Hal F Gottfried - Co-founder Kansas City Open Hardware Group, hal@kcohg.org,  
Cell 913-944-6531

**The STEM Society Website:**

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

### 3 Rich Kaufman: DNA

Rich gave a nice talk on DNA, giving some history, presenting some technical data, and advocating for the **DNA Learning Center** in Cold Spring Harbor, New York. They are teaching various classes to kids in the New York area, and have a WEB site with much information on DNA. Rich thinks a learning center of that type should be made available in Kansas City.

Jan 9 at 1:32 PM

From: Rich Kaufman

To [jdemery@member.ams.org](mailto:jdemery@member.ams.org)

I just googled DNA learning center.....really interesting.....too much to read right now. You might take a look.

P.S. How about a discussion of whether such a program should be established either in KC or another place outside of the East Coast. I know such programs will spring up....they're cutting edge and timely.

I've been reading Jim Watson's 2003 book entitled "DNA" which is a redo of his earlier book "Double Helix ". Also, read "DNA, annotated....", a very detailed discussion of some of the different people and strands of research he and Crick used, plus several false leads they followed before latching onto the helix version.

Since these are really detailed, it might be dull to discuss them.....need to really follow the subject to be that interested. Cold Spring Harbor lab, which Watson ran for 20 plus years, has produced what they call the "DNA Learning Center ", apparently a lesson plan for learning about DNA. If I find out more before Tuesday, at least that might be of interest to everybody.

Rich

## 4 Jim Emery: Using the Sextant to Determine Latitude and Longitude Using Celestial Navigation

**Reference:** *James Emery, Navigation*

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

I referred to a figure in the document **Navigation** and explained the principle of operation of the sextant. It is named for the scale on which the measured angle is read, which is physically 60 degrees, but is marked from 0 to 120 degrees. There is also an instrument called the quadrant. I went over the procedure of determining longitude, using the sextant and a nautical almanac which contains information on the angle between the moon and a star. Several stars serve this purpose. I demonstrated my brass sextant which is made in China and sells for about 20 dollars.

## 5 The Stern-Gerlach Experiment

I gave a brief talk about this experiment.

See the document on our website, *The Stern-Gerlach Experiment*

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

## 6 Tech Week

For more about Tech Week, google "Tech Week".

To: Hal Gottfried

Hal,

There is a guy in our group, Rick Hines, who worked on inventing gold plated heart stents for about ten years, he has several patents, but a few years ago he gave up on the business because he had run out of investment funds.

There were some investors in Israel who contributed over a million dollars. However, just a year ago or so ago, some people from England bought rights to some of his patents. So is a project like that appropriate for "TechWeek?" There could be others interested.

You could come to our next meeting of the Stem Society Tuesday the 10th of next week and give a brief talk, if you wish to.

Address: Trailside Center, 99th and Holmes, KC MO, 6pm

Jim Emery