



NMSR Reports

The Newsletter of the New Mexicans for Science and Reason

NMSR Reports, David E. Thomas, Editor, 1201 N. Avenida de Chamiso Pl., Socorro, NM 87801 © 2022

DECEMBER MEETING:
**NEW MEXICANS FOR SCIENCE AND
 REASON will discuss**
**“Henrietta Lacks, the HeLa Cell
 Line, and the Long Wait for
 Justice”**
=>January 12th, 2022 7:00PM<=
=>Attend online!<=

FUTURE MEETINGS ANNOUNCED!

January 12th, 2022 NMSR Meeting: Henrietta Lacks, the HeLa Cell Line, and the Long Wait for Justice

The topic of our first meeting in 2022 is Henrietta Lacks, 1920 - 1951, an African-American woman born in Roanoke, Virginia. She was the source of the first immortalized human cell line, HeLa. While being treated for cervical cancer at Johns Hopkins Hospital in Baltimore, Maryland, cells from her tumor were collected. These cancerous cells were extremely unusual, and could produce new copies of themselves indefinitely, under the right conditions. Jonas Salk used the HeLa line (named after the first two letters of Henrietta Lacks' first and last names) to develop the polio vaccine. It was instrumental in many other advances, from understanding the effects of X-rays, to diagnosing cancers, to combatting salmonella, AIDS, TB, Ebola, and even enabling the development of gene mapping, which culminated in the Human Genome Project. Henrietta's cells reproduced so well, that by the 70s, her cells had contaminated numerous other cell lines, leading to years of



flawed research by scientists worldwide. Her living relatives were contacted by researchers wanting to develop methods of differentiating HeLa cells from other cell lines. Family members were surprised to learn of their relative's incredible scientific legacy.

In 2022, HeLa cells are still used all over the world. It is estimated that the number of living cells that have come from Henrietta Lacks is hundreds of times her original body mass, and generates billions of dollars for biomedical companies. On October 4th, 2021, the Estate of Henrietta Lacks sued biotechnical company Thermo Fisher Scientific Inc. for “unjust enrichment from the nonconsensual use and profiting from her tissue sample and cell line.”

The meeting will include an update on the lawsuit, and its ramifications for scientific researchers.

Thermo Fisher SCIENTIFIC

Because of the ongoing Corona virus crisis, this meeting will be held online, and members can attend from their homes or offices. It will be hosted on Zoom. A Zoom Link will be sent out to all members and potential attendees before the meeting. To get added to the attendee list, simply email nmsrdave@swcp.com. Then, tune in to Zoom at **7:00 PM January 12th, 2022, On Line!** This will be an interesting meeting, don't miss it!

February 9th, 2022 NMSR Meeting: Dr. Pace VanDevender on “Magnetized Quark Nuggets and Dark Matter”

This talk updates research on Magnetized Quark Nuggets (MQNs), which are a candidate for dark matter and are consistent with the Standard Model of Physics and with the Standard Model of Cosmology. The initial and motivating observation of extreme (20 minute duration) ball lightning was presented to NMSR in 2005.



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New Mexicans for Science & Reason (NMSR)

NMSR is a non-profit group with the goals of promoting science, the scientific method, rational thinking, and critical examination of dubious or extraordinary claims. NMSR meets at 7 PM on the second Wednesday of each month, in Albuquerque, New Mexico, at a secure, undisclosed location. NMSR Reports is its official newsletter.

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Membership: \$25/year (hardcopy newsletter), or \$15/year (downloadable PDF), make your check **payable to NMSR**, send to treasurer (Debbie Thomas).

NMSR Advisors:

- **Mark Boslough**,
Adjunct Professor, University of New Mexico.
- **Kendrick Frazier**
Editor, Skeptical Inquirer
- **John Geissman**
Professor of Paleomagnetism
- **Alan Hale**
Southwest Institute for Space Research
- **Randy Thornhill**
Professor of Biology, UNM

Cyber-Cypher Clue: V = B, X = K.

Bonus Puzzle Clue: Synodic period = $2\pi/(\omega_v - \omega_e)$

WANTED: READER ARTICLES & COMMENTARY

Got something to share with NMSR members? **Send it in!** ATTN: Dave Thomas, Editor, NMSR Reports.

REMEMBER, our next NMSR meeting is **ONLINE, January 12th at 7PM, on Zoom!**



PUZZLE TIME!

[Please send solutions to Dave Thomas at: nmsrdave@swcp.com, or at 1201 N Avenida de Chamiso Pl., Socorro NM 87801.]

Cyber-Cypher: JANUARY PUZZLE

(Submitted by Dave Thomas)

The following letters are a simple substitution cypher. If R stands for L, R will stand for L everywhere. Your Cyber-Cypher Clue: Clue? Oh, well - if you must, see p. 2.

```
" C   E N S G   N M T N Z J   F E H I D E F   C F
T N J           J F B N O D G .   C U           H I B
Y H F E G B ' J   L G M M J   E N S G   W H O G   J H
Y I L E   U H B   Y G W C L C O G ,   E H T   L H Y G
E G B   U N Y C M Z   L N O ' F   N U U H B W   O H
W H L F H B J ? " -   W G V H B N E   M N L X J
```

SUPER SECRET WORD!

However you prefer to do the cypher itself (above or below), simply duplicate those actions on the alphabetized row of cypher letters below. You'll build an answer key, and you'll also reveal - the Super Secret Word!

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

DECEMBER CYPHER SOLUTION

"SCIENCE KNOWS NO COUNTRY, BECAUSE KNOWLEDGE BELONGS TO HUMANITY, AND IS THE TORCH WHICH ILLUMINATES THE WORLD." - VACCINE PIONEER LOUIS PASTEUR

Esteemed December Code Crackers: Mike Arms*, and Austin Moede*!

*Secret Word: "PLUMB DISCOVERY TWANG"

SOCORRO STUMPER

Need more Secret Word Cryptograms?

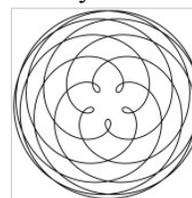
New puzzles every week at

www.nmsr.org/SocorroStumper.htm

January Bonus: "The Timing of Venus"

Submitted by Dave Thomas

The sidereal period of Venus is 225 days, or 0.616 earth years. The most recent Greatest Eastern Elongation (maximum "Evening Star") was on October 29th, 2021. Venus is at inferior conjunction (in front of the Sun) as of press time, January 7th, 2022.



The January Bonus: (A) When will the next Greatest Eastern Elongation of Venus occur? (The time between greatest eastern elongations is called a synodic period.)

(B) What remarkable thing happens in five synodic periods?

December Bonus Solution: “Autofilling Teams”*Submitted by Dave Thomas*

Players in a weekly football pool choose winners of 15 contests between the 32 NFL teams. The person entering picks in a spreadsheet can use the autofill function to enter teams quickly. If the two opposing teams (in blue) are at the top of a column, only the first letter needs to be typed in most cases. In the 3rd column above, typing a D will fill as DEN, and typing a K will fill as KC.

BAL	SF	DEN
PIT	SEA	KC
BAL	SEA	DEN
BAL	SF	KC
BAL	SF	KC

However, when the opposing teams start with the same letter (like S, for both SF and SEA), the autofill does not work well, and errors (like entering Seattle for someone who actually chose San Francisco) are much more common.

The 32 teams are: ARI, AZ, BAL, BUF, CAR, CHI, CIN, CLE, DAL, DEN, DET, GB, HOU, IND, JAX, KC, LAC, LAR, LV, MIA, MIN, NE, NYG, NYJ, NO, PHI, PIT, SEA, SF, TB, TEN, and WAS.

The December Bonus: (A) For a contest between any random pair of teams, what is the probability that the two teams start with the same letter?

(B) For a weekly schedule of 15 games, what is the probability that n of the 15 will have same-letter teams, where $n = 0, 1, 2,$ and 3 ?

Answer: (A) For each letter of the alphabet with 2 or more paired teams (A,B,M,P,S,T:2; D,L:3; C,N:4), find the number of pairs for each. For example, for the 4 C teams (CAR, CHI, CIN, CLE), there are $4C_2 = 6$ possible combinations. All in all, there are 24 possible pairs, out of $32C_2 = 496$ matchups of the 32 teams, for a probability of $3/62 \sim 0.048$ for two teams matching start letters.

(B) For $n = 0, 1, 2,$ and 3 , out of 15 Bernoulli Trials with $p=3/62$, the probabilities are 0.475, 0.362, 0.129 and 0.028 respectively.

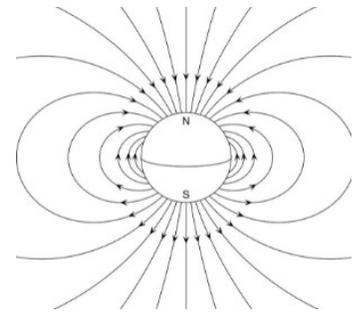
Results for 2021-22 Season:

10 weeks with 0 pairs, 2 with 1, 5 with 2, 1 with 3, and none with higher than 3.

Magnetized quark Nuggets, Continued

The association of extreme ball lightning with MQNs, the interaction of MQNs with normal matter, and a proposal to instrument the Great Salt Lake to record MQN impacts were presented to NMSR in 2017. This talk briefly summarizes subsequently published results of 1) the Great Salt Lake experiment, 2) the first-principles calculations of

the formation and evolving mass distribution of MQNs, 3) the theory of interaction with normal matter, 4) observations of non-meteorite craters as evidence of MQN impacts, and 5) the potential of observing MQNs by their radio-frequency emissions with a three-satellite constellation beyond geosync orbit. More introductory information and links to the published papers can be found at mqncollaboration.com. However, most of the talk will be devoted to the accumulation of MQNs in magnetite deposits, where the magnetic force prevents the gravitational force from pulling MQNs to the center of the Earth after MQNs are slowed by passage through overburden. We show that mining of magnetite and taconite would cause MQNs to be accumulated in the bottoms of the furnaces that reprocess the steel from ore-processing machines. Three such furnaces should have the MQNs accumulated in several gigatons of ore during the last 1.8 billion years. We present scans of the magnetic field of these three furnaces. The scans are easily distinguishable from control scans of unexposed steel and are consistent with hundreds of MQNs residing in these furnaces. Negotiations are underway to collect some of these presumptive MQNs for laboratory experiments and applications. As before, alternative explanations and other critical comments from the audience would be appreciated as preliminary peer review of these unpublished results.



Join us February 9th, 2022 on Zoom!

December 8th, 2021 NMSR Meeting:**JW Madison on “What's New in Light Rail?”**

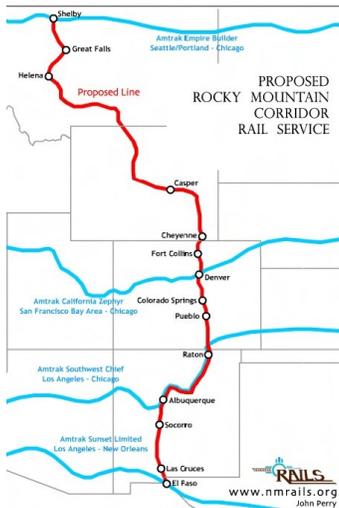
JW Madison spoke previously to NMSR on “What's so (damn) important about trains?” on August 8th, 2012. He returned on December 8th to give us an update on light rail and other transportation topics.



JW explained about his group, Rails Inc. (www.nmrails.org), and their push for greatly expanded passenger rail service. Unlike travel by air, highways or waterways, trains do not enjoy

publicly-owned infrastructure. Trucking companies don't own the interstate, the public does. Airports are publicly funded and supported. Shipping companies don't own our rivers and lakes. Yet rail infrastructure belongs in the hands of companies like BNSF.

JW presented some suggestions for new lines. The group's proposed Rocky Mountain Corridor



would use existing lines and infrastructure (embankments, tunnels, etc.), and would provide connections between four existing AMTRAK east-west lines (going through El Paso, Albuquerque, Denver, and Shelby, Wy.)

While trains get poor mileage (a couple of miles per gallon), when you take into consideration the hundreds of passengers

and thousands of tons of goods transported, it is much more economical than other modes of transport. An 82-foot-wide double-track rail line can handle 700 more people per hour than can a 6-lane highway three times as wide. A high-speed train trip of 275 miles produces about 29 pounds of carbon emissions; an airplane flight for the same distance would produce 176 pounds. A freight train moves a ton of freight about 436 miles per gallon of diesel fuel; this is about four times farther than a traditional truck.



Our Future Passenger Rail System

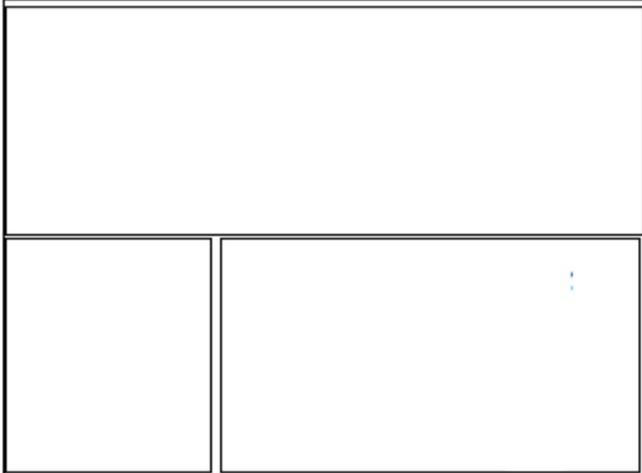
Map created for Rails, Inc. by John Perry

JW Madison presented the hopeful vision of an American Rail System shown above, and encouraged the audience to brow-beat the government to help make this happen. A fast-paced Q&A session followed. NMSR thanks JW Madison for an informative presentation.

Videos of past meetings are available at <http://www.nmsr.org/meetings.htm>.

DUES check the date on your mailing label. If it's time for you to renew, or to make a contribution, please make your check payable to NMSR, and send it to Debbie Thomas, NMSR Treasurer, 3205 Alcazar NE, Albuquerque., NM 87110
Name _____
Address _____
Membership \$25 per annum (hard copy newsletter), or \$15 per annum (online newsletter).

The NMSR e-mail list is fun! It's an e-mail list with news announcements of interest to NMSR members, discussions about news of the times, and more. To join, send a request to nmsrdave@swcp.com.
Thanks to: John Covan, Eddy Jacobs, Debbie Thomas, and all of our Puzzlers!



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Online/Zoom