

The Galena Sentinel Times

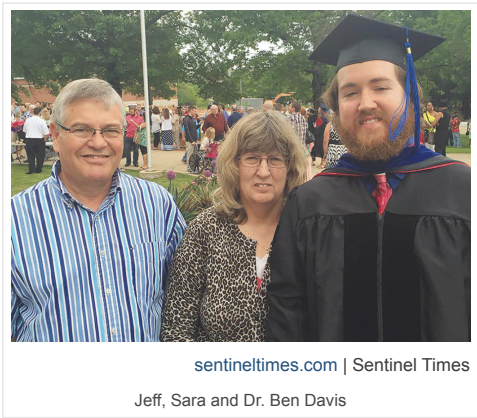
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The Galena Sentinel Times Featured News Out of this World

OUT OF THIS WORLD

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Jeff, Sara and Dr. Ben Davis

Spiral Arms and Black Holes

David Nelson

From communities like those in Cherokee County, Kansas, we have students that have graduated from our school systems and move on throughout this country to excel and contribute to our society and so here is . . . the rest of the story on the ties of a former Riverton High School graduate who has been doing research at the University of Arkansas on Astrophysics, extragalactic astronomy, structure & dynamics of disk galaxies, who wrote a doctorate thesis on the Logarithmic Spiral Arm Pitch Angle of Spiral Galaxies, he spent the summer as an intern at the Johnson Jet Propulsion Laboratory, and graduated on May 8th with a Doctorate in Philosophy (Ph.D.) in Space & Planetary Science.

If that wasn't enough, I found out this former resident had ties indirectly to the movie *Interstellar* . . . and then a post on Facebook with him in a picture with some of the Apollo 13 team. At the encouragement of one of our readers, I'm providing the rest of the story.

A couple of weeks ago the Sentinel ran a front page picture of the Apollo 13 Mission Control Flight Director, Gene Kranz; Astronauts Fred Haise, lunar module pilot; and Flight Captain Jim Lovell, pictured with Benjamin "Ben" Davis, formerly of Riverton. When the Sentinel ran the photo, we identified those in the photo, but failed to tie the picture to the local area by mentioning Davis or his ties to the area. The Apollo 13 team had been at the University of Arkansas to speak at the university as part of the Arkansas Distinguished Lecture Series. Of importance was the fact that Davis actually met the team as did the Space Center Faculty and students of the UA.

I will say, the accomplishments of this young man doesn't surprise me. Ben is the son of Sara and Jeff Davis of Riverton. Ben and his wife Nicolette now reside in Fayetteville, Arkansas where Ben has been a Graduate Research Assistant, as part of the Arkansas Galaxy Evolution Survey research team. While at the UA, Ben was a teaching assistant in the Survey of the Universe Laboratory, an instructor of College Physics II Drill, University Physics I Laboratory and previously a teaching assistant at the Astronomy Laboratory at Pittsburg State University.

Ben graduated from Riverton High School in 2003, Valedictorian and Senior Class President. At Riverton Ben math and science teachers were Danny Anderson – Physics, Astronomy, & Meteorology (Danny is now retired

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and co-owner with his wife Kathy of the Street Car Station Coffee Shop). Cynita Huntsinger (Woods – former name) – Biology and Chemistry, and Sara Davis – Algebra I, Algebra II, College Algebra, Advanced Math, Calculus, and Advanced Calculus. He graduated from Pittsburg State University, Pittsburg, KS with a Bachelor of Science (B.S.) in Mathematics & Physics and a Minor in Music in 2008, he graduated Magna Cum Laude. Inquisitive Mind? To say the least . . . for years, Ben used to ride with me as we drove to Parsons, KS every Monday evening for orchestra practice with the Labette County Community Orchestra. During that hour and a half drive to and from Parsons, it was an open book of discussions, with a lot of it focused around space, theories about space, and what I knew, what I had learned over the years, and what I speculated but readily admitted what I didn't know. During that drive, we were not limited to this world but the universe as we knew it, discussions about infinity and beyond. I will say it kept me alert and focused during the drive home. Ben questions, and I will say it was more fact finding on his part because it wasn't just about what I knew but was it possible that . . . ? Those were the questions on his mind.

Ben's advisor at the UA is Dr. Julia Kennefick. She is a member of the Arkansas Center for Space and Planetary Sciences and Department of Physics, conducts research on the distribution of quasars in the universe. Since coming to the University of Arkansas, her husband Dr. Dan Kennefick co-founded the Arkansas Galaxy Evolution Survey (AGES) and serves as its Principal Investigator.

The mission statement of the AGES group defines an overall program of investigating the mass function of supermassive black holes (SMBHs). Essentially, Ben noted that they are engaged in a census to find out what is the typical size of the black hole that is thought to lurk at the center of every galaxy. "We have three main research areas within this overall program: The first is to use images of normal galaxies, out to distances of several billion light years from the Sun, to estimate the mass of their quiescent black holes. To do this, we measure visible quantities of the host galaxy, such as the pitch angle (a measurement of the tightness of winding) of the spiral arms in disk galaxies, which our group has demonstrated correlates well with the mass of the black hole of that galaxy. The second is to make use of spectral techniques to measure the mass of the black holes that power quasars. A quasar is a SMBH in the process of swallowing new matter, which causes the matter falling towards the hole to shine more brightly than an entire galaxy. The third research area is to find evidence of binarity, in which a galaxy has not one, but two SMBHs orbiting each other at its center." As a researcher in the AGES group, Ben set out to investigate our overall research goal by focusing on the primary research area laid out by our collaboration. My research has been relevant to black holes and is presented in my publications which detail our group's development of software to accurately measure the winding of spiral arms in galaxies, relate that to the mass of the hidden SMBHs residing at the center of spiral galaxies in our Universe, and using it to predict the mass of SMBHs residing in previously unmeasured spiral galaxies.

Now the tie to the movie Interstellar, Kip Thorne is an expert gravitation. According to Ben, "he literally wrote the book on gravity (titled simply: Gravitation), a book so thick and heavy that students have always joked that it is the only book that you can learn about its concepts just by carrying it around!" Dr. Dan Kennefick, one of Ben's professors at UA, was a student of Kip's at Caltech. Dan focused on the study of gravitational waves under Kip's tutelage. Gravitational waves were initially theorized to exist by Einstein in 1916 on the basis of his theory of General Relativity. Current efforts to detect gravitational waves involve looking for the telltale signs of ripples in the fabric of spacetime that pass through our vicinity by measuring the infinitesimal expansion and contraction of the distances between test masses of lengths known to extremely high precision by the use of lasers. Kip Thorne is a co-founder of one such experiment currently attempting to detect gravitational waves. Kip's work with the Double Negative Visual Effects company on the movie Interstellar led to a ground breaking computer graphic representation of a wormhole and a rapidly spinning SMBH (nicknamed "Gargantua" in the film) that were both visually stunning and scientifically accurate. He was the initial concept developer and executive producer on the film Interstellar.



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UPCOMING EVENTS

NOV

13

Sat

(http://www.sentineltimes.com/calendar/action-oneday/exact_date~11-13-2021/)

10:00 am

Galena Masonic Lodge Breakfast @ Galena Masonic Lodge (http://www.sentineltimes.com/event/galena-masonic-lodge-breakfast/?instance_id=2740)

NOV

20

Sat

(http://www.sentineltimes.com/calendar/action-oneday/exact_date~11-20-2021/)

6:30 am

Baxter Springs Lions Club Biscuit... @ Baxter Springs Lions Club (http://www.sentineltimes.com/event/baxter-springs-lions-club-biscuit-gravy-breakfast/?instance_id=2861)

NOV

25

Thu

(http://www.sentineltimes.com/calendar/action-oneday/exact_date~11-25-2021/)

11:30 am

The GHS Class of 1957 Luncheon @ Main Street Deli (http://www.sentineltimes.com/event/the-ghs-class-of-1957-luncheon/?instance_id=3223)

DEC

2

Thu

(http://www.sentineltimes.com/calendar/action-oneday/exact_date~12-2-2021/)

11:30 am

The GHS Class of '47 Luncheon @ Main Street Deli (http://www.sentineltimes.com/event/the-ghs-class-of-47-luncheon/?instance_id=3351)

DEC

3

Fri

(http://www.se

12:00 pm

The GHS Class of 1966 Luncheon (http://www.sentineltimes.com/event/

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the-ghs-class-of-1966-luncheon/?instance_id=2982)

DEC

4

Sat

(http://www.sentinel-times.com/calendar/action~oneday/exact_date~12-4-2021/)

7:00 am

Baxter American Legion Biscuit &... @ Baxter American Legion

(http://www.sentinel-times.com/event/baxter-american-legion-biscuit-gravy/?instance_id=2620)

DEC

11

Sat

(http://www.sentinel-times.com/calendar/action~oneday/exact_date~12-11-2021/)

10:00 am

Galena Masonic Lodge Breakfast @ Galena Masonic Lodge

(http://www.sentinel-times.com/event/galena-masonic-lodge-breakfast/?instance_id=2741)

DEC

14

Tue

(http://www.sentinel-times.com/calendar/action~oneday/exact_date~12-14-2021/)

11:00 am

The GHS Class of 1968 Luncheon

(http://www.sentinel-times.com/event/the-ghs-class-of-1968-luncheon/?instance_id=3104)

DEC

18

Sat

(http://www.sentinel-times.com/calendar/action~oneday/exact_date~12-18-2021/)

6:30 am

Baxter Springs Lions Club Biscui... @ Baxter Springs Lions Club

(http://www.sentinel-times.com/event/baxter-springs-lions-club-biscuit-gravy-breakfast/?instance_id=2862)

DEC

23

Thu

(http://www.sentinel-times.com/event/the-ghs-class-of-1957-luncheon/?instance_id=3104)

11:30 am

The GHS Class of 1957 Luncheon @ Main Street Deli

(http://www.sentinel-times.com/event/the-ghs-class-of-1957-luncheon/?instance_id=3104)

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JAN 1 Sat (http://www.sentineltimes.com/calendar/action~oneday/exact_date~1-1-2022/)

7:00 am Baxter American Legion Biscuit &... @ Baxter American Legion (http://www.sentineltimes.com/event/baxter-american-legion-biscuit-gravy/?instance_id=2621)

JAN 6 Thu (http://www.sentineltimes.com/calendar/action~oneday/exact_date~1-6-2022/)

11:30 am The GHS Class of '47 Luncheon @ Main Street Deli (http://www.sentineltimes.com/event/the-ghs-class-of-47-luncheon/?instance_id=3352)

JAN 7 Fri (http://www.sentineltimes.com/calendar/action~oneday/exact_date~1-7-2022/)

12:00 pm The GHS Class of 1966 Luncheon (http://www.sentineltimes.com/event/the-ghs-class-of-1966-luncheon/?instance_id=2983)

JAN 8 Sat (http://www.sentineltimes.com/calendar/action~oneday/exact_date~1-8-2022/)

10:00 am Galena Masonic Lodge Breakfast @ Galena Masonic Lodge (http://www.sentineltimes.com/event/galena-masonic-lodge-breakfast/?instance_id=2742)

JAN 11 Tue (http://www.sentineltimes.com/

11:00 am The GHS Class of 1968 Luncheon (http://www.sentineltimes.com/event/the-ghs-class-of-1968-luncheon/?instance_id=3105)

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JAN
15
Sat
(http://www.sentinel-times.com/calendar/action~oneday/exact_date~1-15-2022/)

6:30 am Baxter Springs Lions Club Biscuit... @ Baxter Springs Lions Club
(http://www.sentinel-times.com/event/baxter-springs-lions-club-biscuit-gravy-breakfast/?instance_id=2863)

JAN
27
Thu
(http://www.sentinel-times.com/calendar/action~oneday/exact_date~1-27-2022/)

11:30 am The GHS Class of 1957 Luncheon @ Main Street Deli
(http://www.sentinel-times.com/event/the-ghs-class-of-1957-luncheon/?instance_id=3225)

FEB
3
Thu
(http://www.sentinel-times.com/calendar/action~oneday/exact_date~2-3-2022/)

11:30 am The GHS Class of '47 Luncheon @ Main Street Deli
(http://www.sentinel-times.com/event/the-ghs-class-of-47-luncheon/?instance_id=3353)

FEB
4
Fri
(http://www.sentinel-times.com/calendar/action~oneday/exact_date~2-4-2022/)

12:00 pm The GHS Class of 1966 Luncheon
(http://www.sentinel-times.com/event/the-ghs-class-of-1966-luncheon/?instance_id=2984)

FEB
5
Sat
(http://www.sentinel-times.com/calendar/action~oneday/exact_date~2-5-2022/)

7:00 am Baxter American Legion Biscuit &... @ Baxter American Legion
(http://www.sentinel-times.com/event/baxter-american-legion-biscuit-gravy/?instance_id=2622)

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