

JMU TEDx Presents—April 10, 2018

# *Ripples in the Cosmic Web*

*Dr. Dave Pruett, Emeritus  
Department of Mathematics & Statistics  
James Madison University*

“We are in trouble just now because we do not have a good story. We are between stories.”

—Father Thomas Berry,  
cultural historian  
(1914–2009)





Image: Creative Commons (Public Domain)



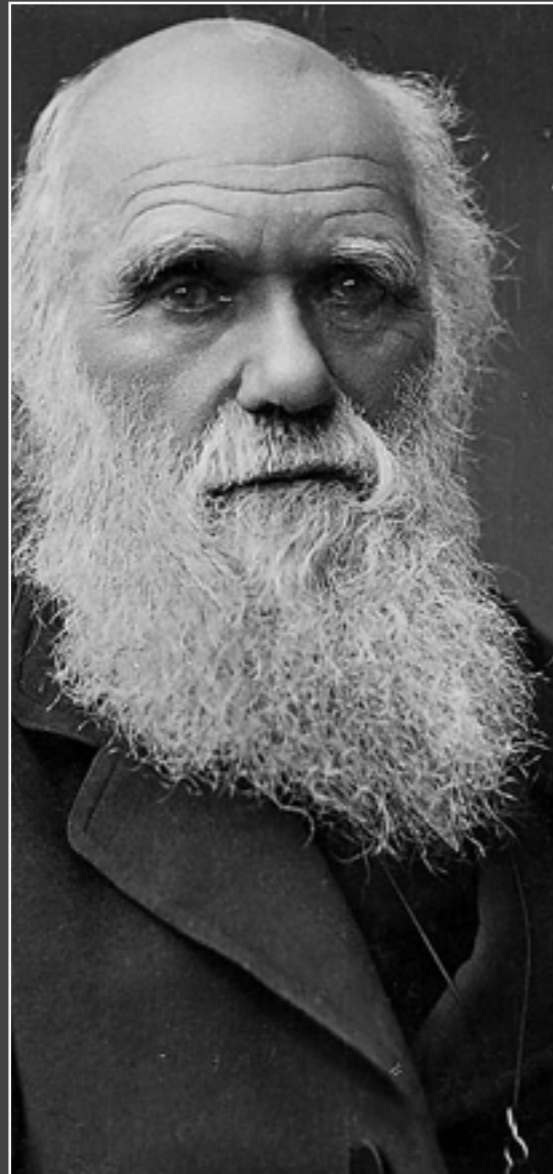
# Nicolaus Copernicus 1473-1543

*Conversation with God* by Jan Matejko (1872)





# The Second “Copernican” Revolution: Charles Robert Darwin



- 1809-1882
- Voyage of the Beagle (1839)
- Origin of Species (1859)
- Descent of Man (1871)

1881 Photograph by Herbert Rose Barraud (Public Domain)



“Do we really have to make the tragic choice between an antiscientific philosophy and an alienating science?”

—Ilya Prigogine,  
Nobel Laureate, Chemistry



Photo: Mike Miriello



## **From Black Elk to Black Holes**

*A joint venture to integrate the intuitive and the rational* BY DAVE PRUETT

*A joint venture to integrate the intuitive and the rational* BY DAVE PRUETT

## **FROM BLACK ELK TO BLACK HOLES**



Shaping  
a Personal Myth  
to Live By

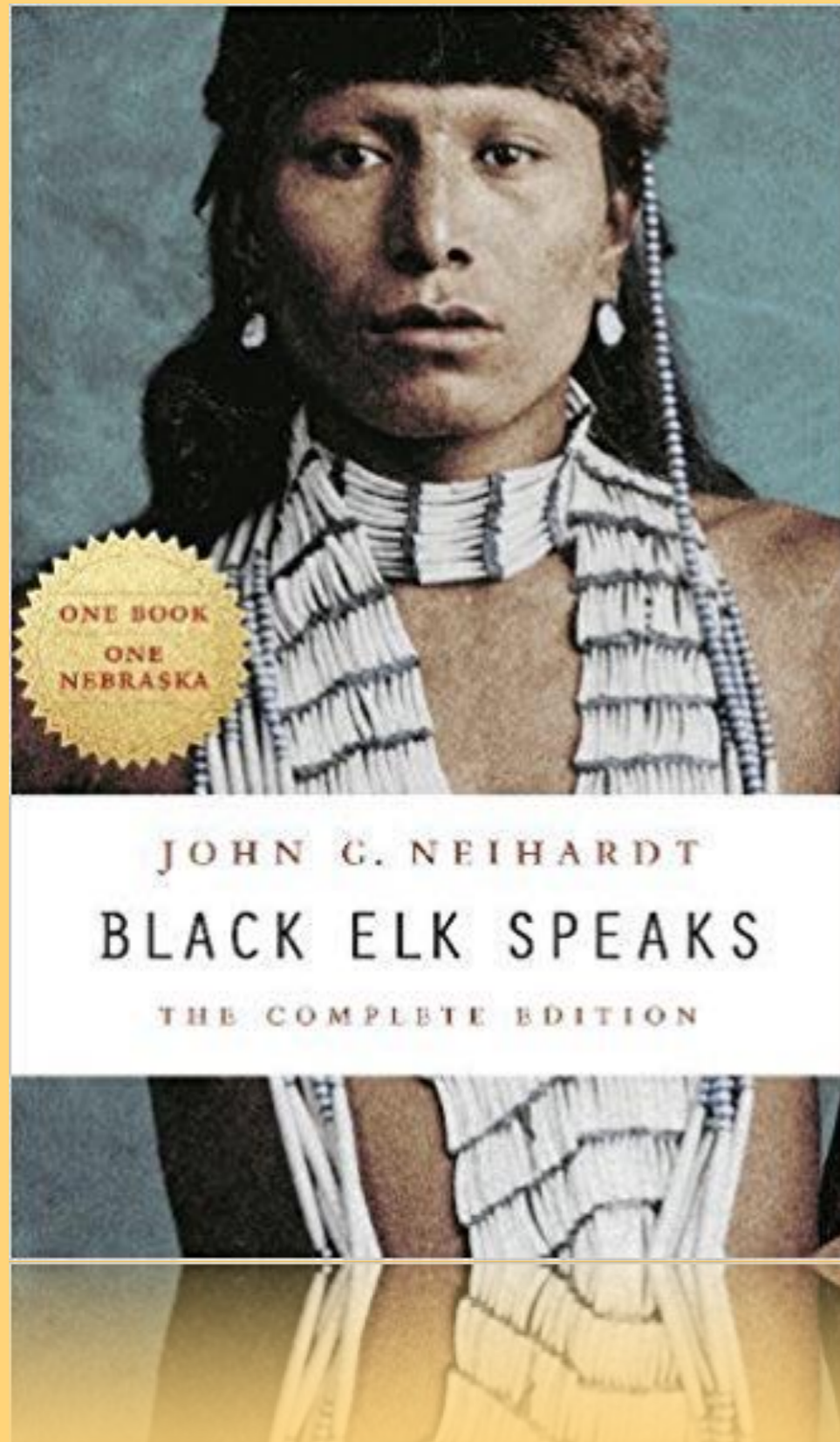


John R. Yungblut



John R. Yungblut  
(1913-1995)





A “North American bible of all tribes.”

—Vine Deloria

#1 Best Seller in History of Ethnic & Tribal Religions

# JET STREAM:

Hubble image of jets of high-speed particles spewing from a massive **black hole** at the heart of a galaxy



PHOTO: NASA, ESA, STSCI



Photo: Mike Miriello



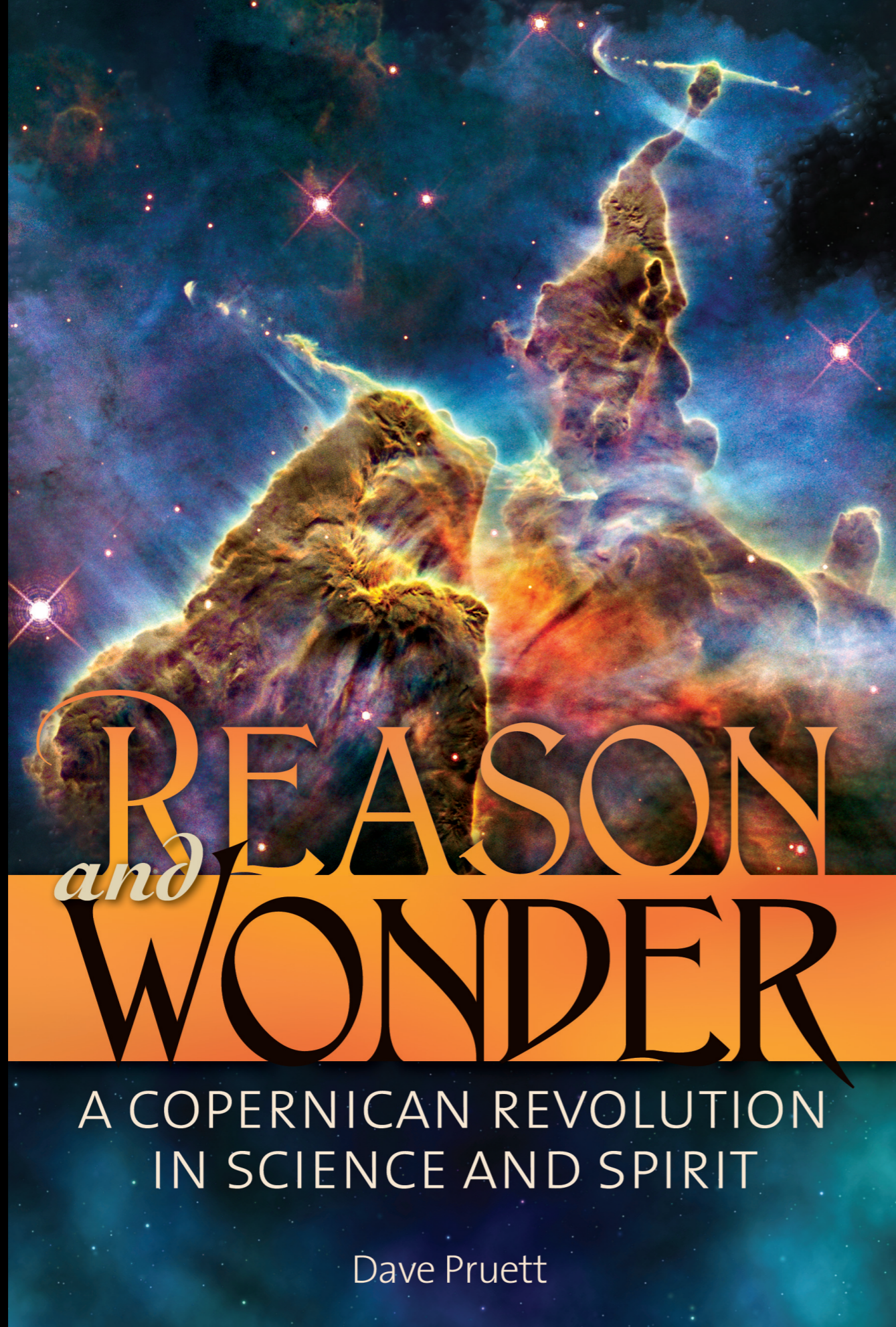
## **From Black Elk to Black Holes**

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## **FROM BLACK ELK TO BLACK HOLES**





Praeger (2012)  
Paperback (2016)



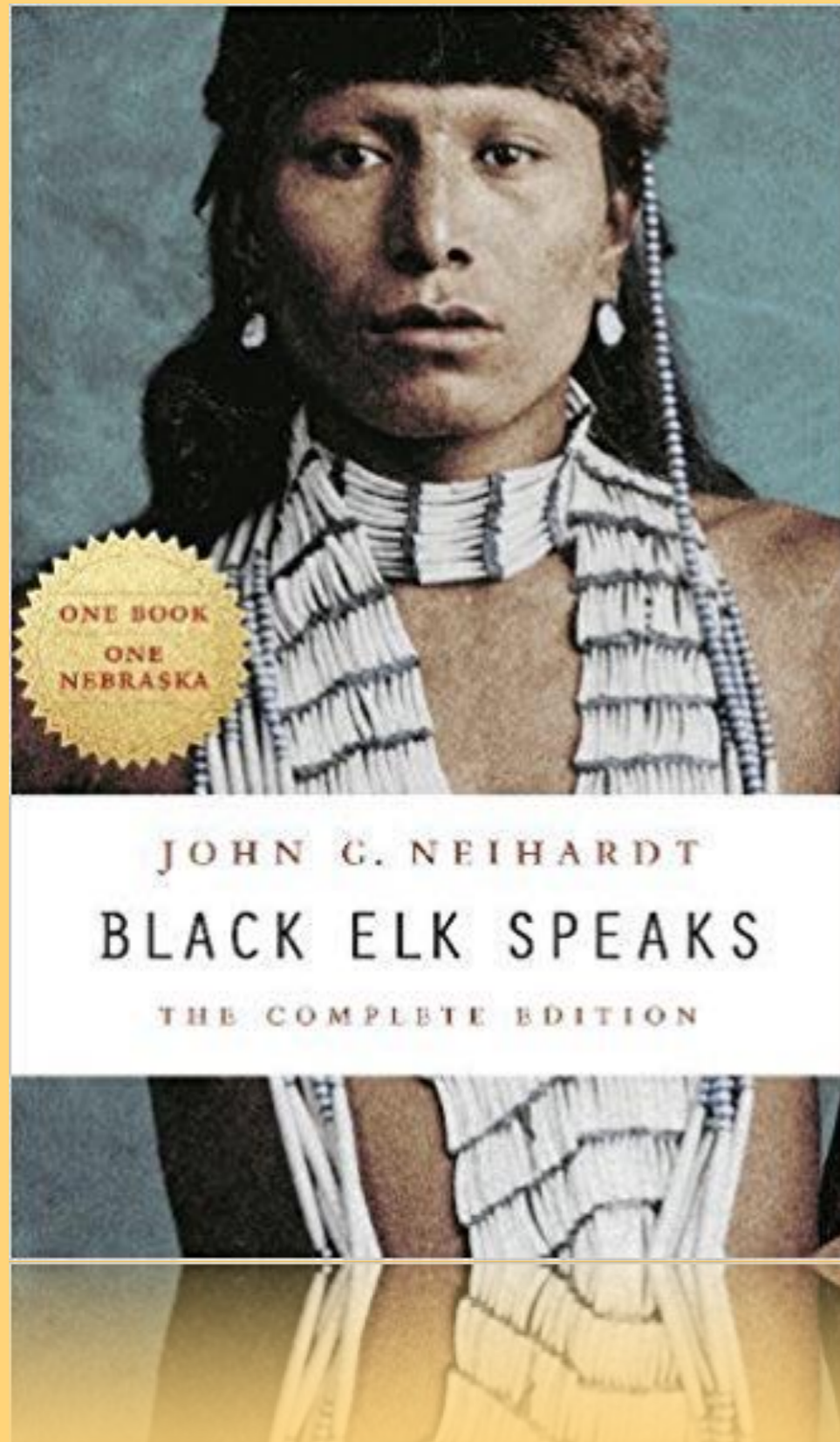
“Is it appropriate to write  
on an evaluation that this  
class changed my life? It  
did . . . .”

—Student Comment  
HON200D, Spring 1999

# JMU HON200—Spring 2009







A “North American bible of all tribes.”

—Vine Deloria

#1 Best Seller in History of Ethnic & Tribal Religions

***“mitakuye oyasin”***—Lakota

**“All my relatives”**—English







# Contemporaries!

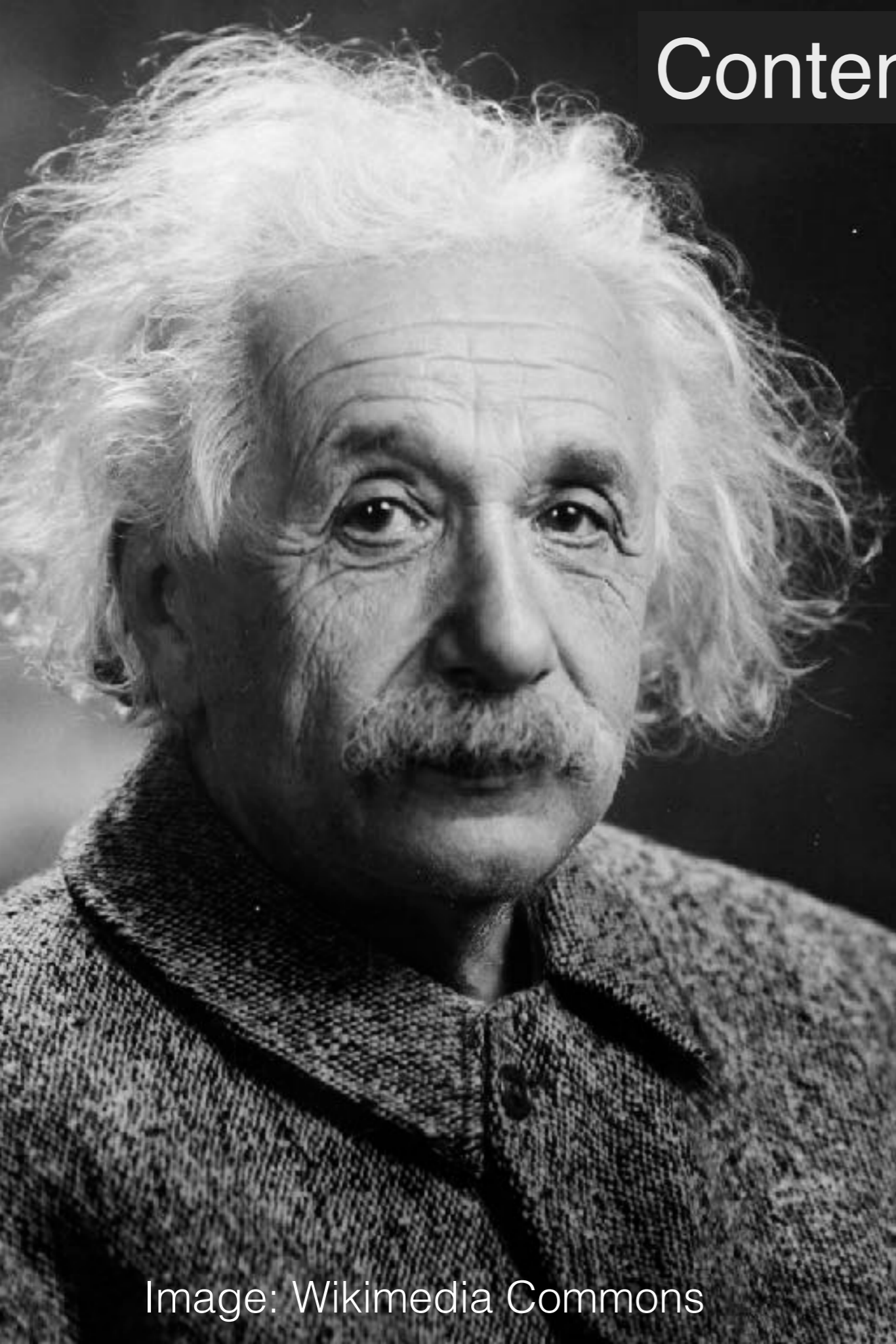


Image: Wikimedia Commons

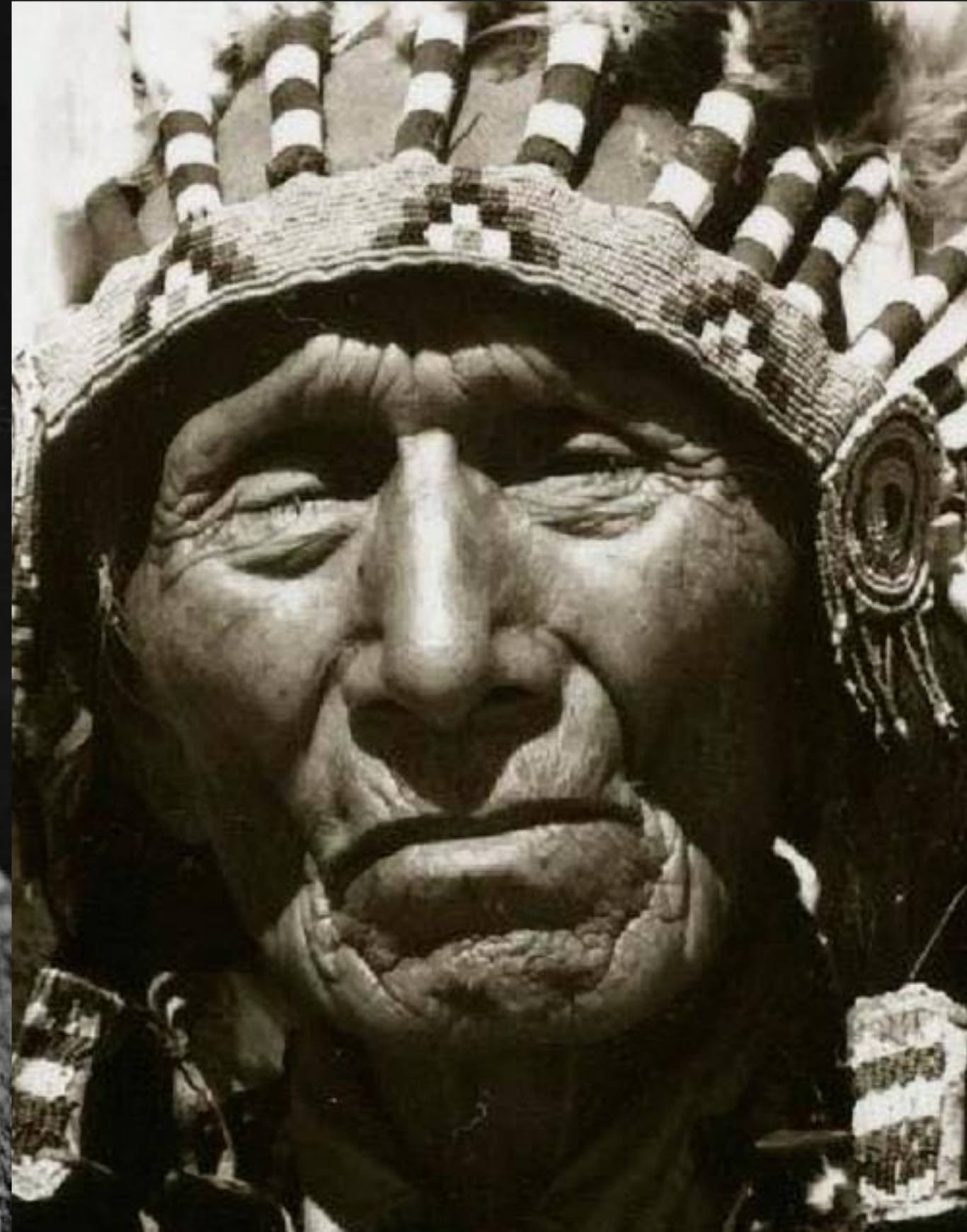
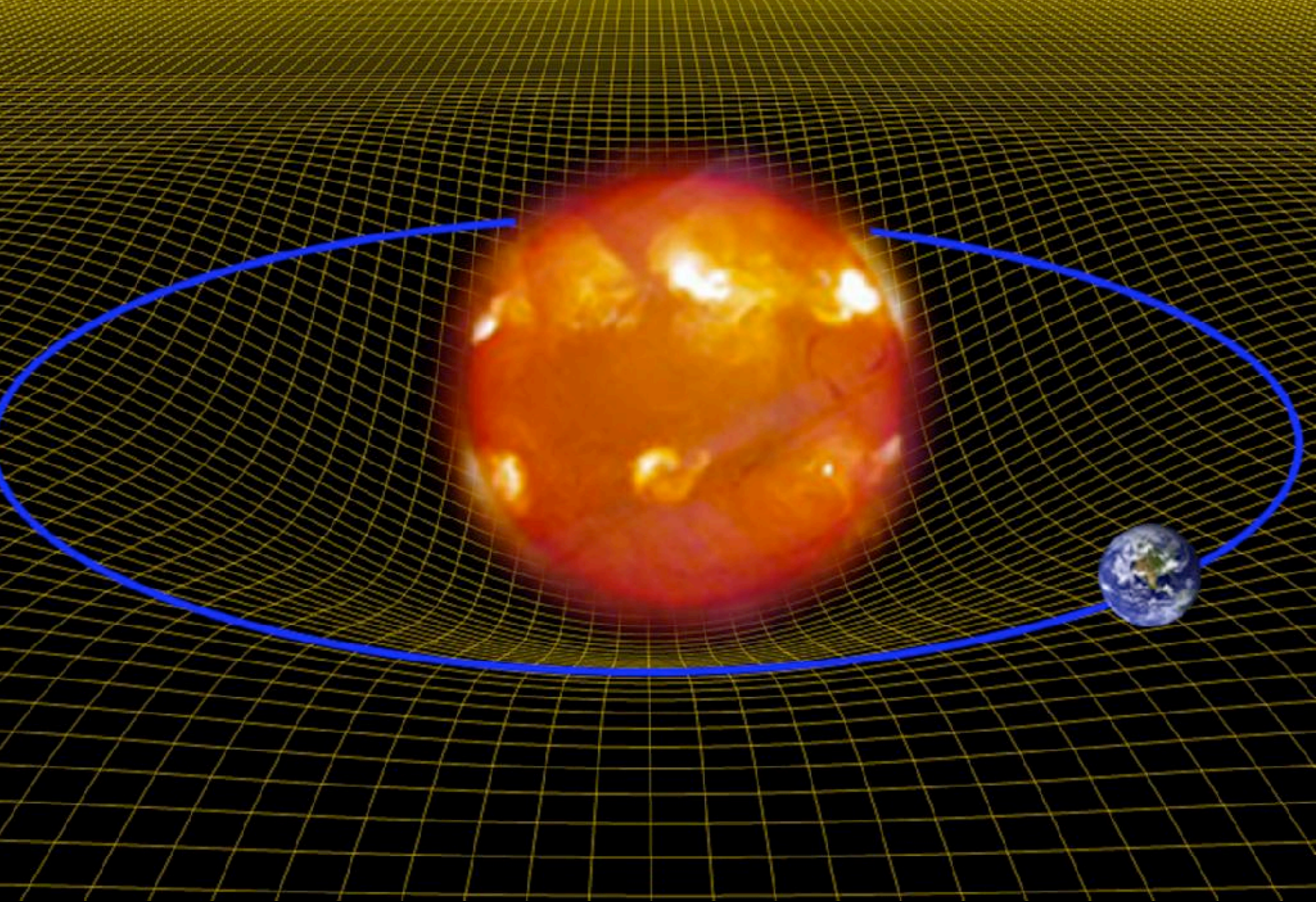
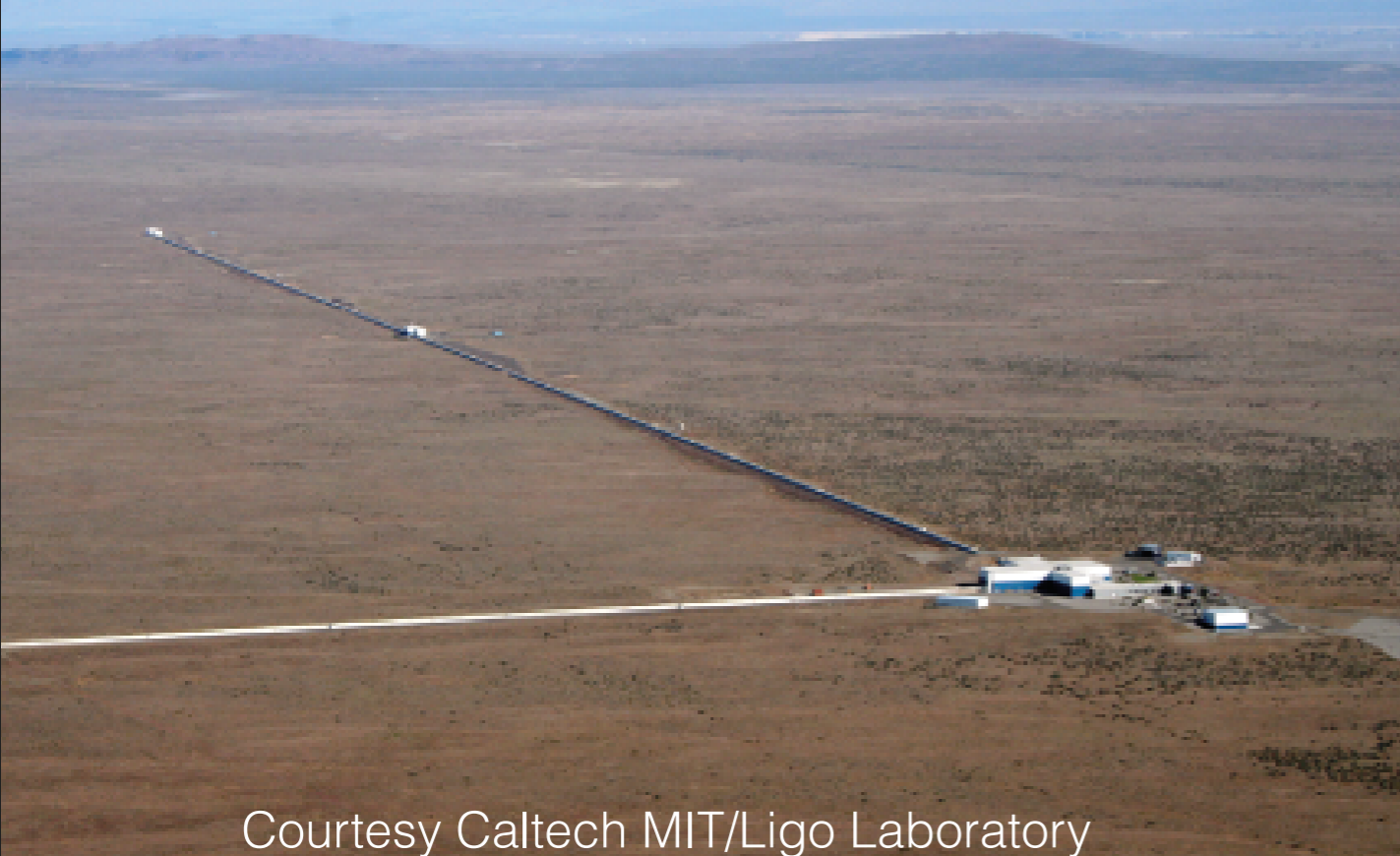


Image: Indian Country Media Network 18









Courtesy Caltech MIT/Ligo Laboratory



# LIGO



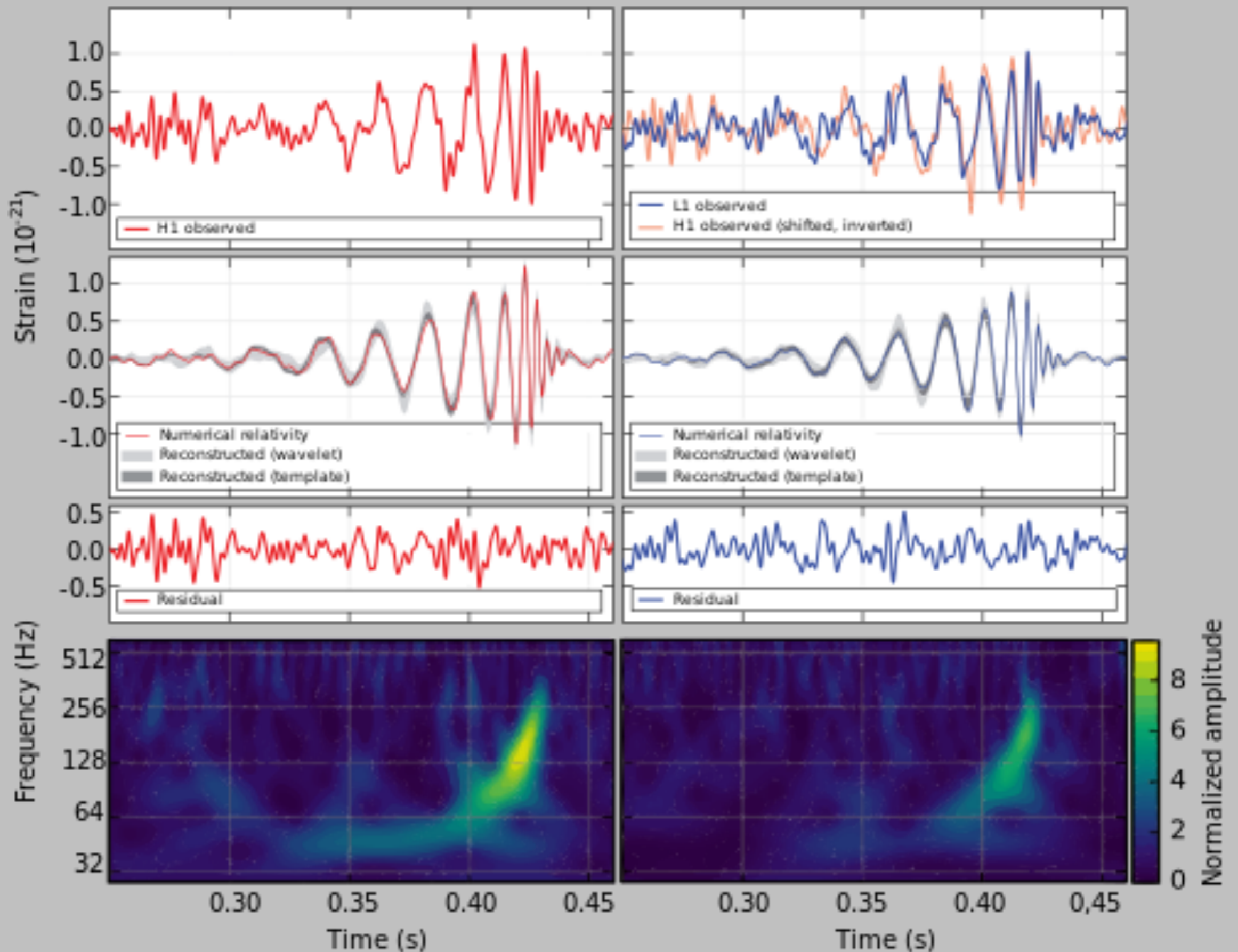
Courtesy Caltech MIT/Ligo Laboratory



Courtesy Caltech MIT/Ligo Laboratory

Hanford, Washington (H1)

Livingston, Louisiana (L1)





B.P. Abbott et al. (LIGO Scientific Collaboration  
and Virgo Collaboration,  
“Observation of Gravitational Waves from a  
Binary Black Hole Merger,”  
*Physical Review Letters* 116, 11 February 2016

“The Chirp Heard across the Universe”  
*NY Times*, 16 February, 2016

*"For the greatest benefit to mankind"*  
*Alfred Nobel*



The Royal Swedish Academy of Sciences has decided to award the

# 2017 NOBEL PRIZE IN PHYSICS

Illustrations: Niklas Elmehed, Nobel Prize Medal: © The Nobel Foundation, Photo: Lovisa Engblom.



**Rainer Weiss**  
**Barry C. Barish**  
**Kip S. Thorne**

*"for decisive contributions to the LIGO detector and the observation of gravitational waves"*



# JMU HON200—Spring 2009







By Hansen, Rick L, U.S. Fish and Wildlife Service [Public domain], via Wikimedia Commons



