Scientist says neutron stars, not black holes, at center of galaxies

1 December 2005

For the past 50 years, black holes have been all the rage. Now, a University of Missouri-Rolla researcher says they never existed.

Scientists have long believed that hydrogen fusion generates heat and light in the sun and other ordinary stars for billions of years before a star collapses into a neutron star or black hole when its fuel is exhausted. “Most scientists think neutron stars are dead matter, rather than energized, and might collapse further to form black holes at the center of galaxies,” says Dr. Oliver Manuel, a professor of nuclear chemistry at UMR. “In this scenario, the end game is the end of light as we know it.”

Manuel thinks neutron stars are at the beginning of an astronomical renaissance, so to speak.

In a new paper (arxiv.org/pdf/nucl-th/0511051), Manuel and his co-authors claim massive neutron stars are the energy source at the center of galaxies. “The neutron stars break up and form smaller stars, which drift apart to form planetary systems,” Manuel says.

Manuel is the lead author of the new paper, “On the Cosmic Nuclear Cycle and the Similarity of Nuclei and Stars.” In the abstract, the authors state, “This cycle involves neither the production of matter in an initial Big Bang, nor the disappearance of matter into black holes.”

Since the 1960s, scientists have more or less assumed that black holes populate the center of galaxies. Manuel says that assumption just doesn’t make sense to him.

“You should find a hole there, not a huge outpouring of energy and light,” Manuel insists. “If black holes exist at the center of galaxies, stars should be falling in -- instead of explosively moving away from the center.”

According to Manuel, all of the “fragmentation” created by neutron stars and the fission of heavy elements at the centers of galaxies can be explained by “neutron repulsion.”

“Neutrons and protons in the nucleus work like the north and south ends of magnets,” Manuel explains. “Neutrons repel neutrons, protons repel protons, but neutrons attract protons. Neutron repulsion is the force that energizes neutron stars. This empirical fact was discovered by five graduate students working with me to decipher the nuclear mass data for the 2,850 known nuclides in the spring of 2000.”

Manuel and the group of UMR graduate students published their findings in 2000 in the Journal of Fusion Energy.

Last summer, Manuel and other UMR researchers reported that a small neutron star is at the core of our sun and other ordinary stars. Those conclusions are forthcoming in the Proceedings of the First Crisis in Cosmology Conference by the

American Institute of Physics.

"The heat, light and hydrogen pouring from these stars are produced by neutron repulsion in their cores," Manuel says.

Furthermore, according to the UMR scientist, our sun once belonged to a larger neutron star that exploded to form the current solar system. He imagines massive neutron stars to be like giant nesting dolls that give birth to smaller stars.

"The super massive neutron stars break up and form galaxies of smaller stars, just as the nuclei of the heavy elements break apart," Manuel says.

In their paper "On the Cosmic Nuclear Cycle and the Similarity of Nuclei and Stars," Manuel and co-authors Michael Mozina of Emerging Technologies and Hilton Ratcliffe of the Astronomical Society of South Africa argue that neutron repulsion also explains the luminosity of the sun and other ordinary stars.

"Additionally, neutron repulsion explains extremely high energy events like quasars, which are associated with high-density regions of space," Manuel says. "These were previously attributed to black holes."

Source: University of Missouri-Rolla