

# K-State Mathematician Receives Grant to Study Gravity, Black Holes, Possible Future Space Travel

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A grant from a new virtual institute dedicated to exploring questions about the foundations of physics and the origin of the universe will help a Kansas State University mathematician with his research on gravity, black holes and how the universe was created.

Louis Crane, professor of mathematics at K-State, will use a \$135,247 grant from The Foundational Questions Institute to complete an interpretation he helped create of a model for quantum gravity, the BC model.

"I want to find a final theory that unifies the two branches of theoretical physics -- quantum gravity and general relativity -- for a quantum theory of gravity," Crane said. "I hope this will tell us about black holes and where we came from."

Crane said his interpretation would be applied to small black holes to see how their formation, radiation and interaction with matter differs from the semiclassical predictions.

Crane also wants to take his research one more step: to see how it might be used for possible interstellar space travel in the future.

"This information will be used to study the feasibility of using small artificial black holes as sources of energy and as propulsion methods for

starships," he said. "Nobody seems to have looked at this. While it is something for far in the future, I'm pleased to get the chance to explore the possibility."

Crane's grant was part of The Foundational Questions Institute's inaugural grant award of \$2 million to 30 grant recipients.

Source: Kansas State University

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