Description of Funded Research Projects
1st Call for H.F.R.I. Research Projects to support Post-Doctoral Researchers

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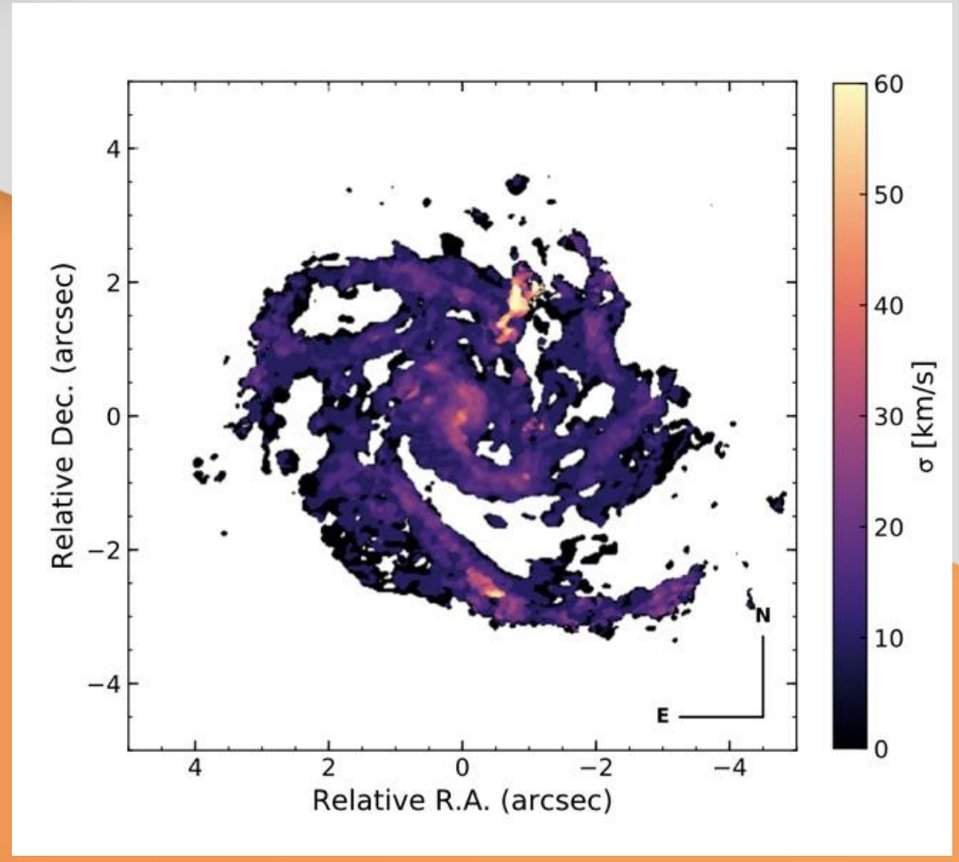
Research Project Title:

Do massive winds induced by black-hole jets alter galaxy evolution? Evidence from galaxies in the Atacama Large Millimeter Array (ALMA) Radio-source Catalog

Principal Investigator:
Kalliopi Dasyra



Popular Title:
Do massive winds induced by black-hole jets alter galaxy evolution?

Scientific Field:
Astrophysics

Host Institution:
National Observatory of Athens

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A major recent discovery, is that supermassive black holes expel and heat large amounts of molecular gas in galaxies, which is responsible for star formation. Plasma jets and radiation pressure, which are related to the infall of matter onto black holes, can accelerate gas beyond escape velocity; resulting winds often have mass flow rates exceeding star formation rates in their galaxies. But are these phenomena significant enough to affect galaxy sizes? To answer this question, we will systematically exploit molecular (CO) line observations from the largest mm interferometer today, the Atacama Large Millimeter Array (ALMA).

We will examine large, cosmological scales and small, galaxy scales. At large scales, we will deduce the changes caused by winds on the gas content of galaxies. At small scales, we will study the differences in the molecular gas excitation in ‘galaxy disks vs. winds’, to study its capacity to form stars. A distinctive feature of our project is the use of quasars selected from the ALMA radio-source catalog: we will mine archival data that were mainly acquired for calibration purposes and risk to remain scientifically unexploited.

Project Impact on Society

This program will enable the development of radioastronomy in Greece. While radioastronomy is one of the main branches of international astronomy, it is effectively undeveloped in Greece. A main goal of this program is to educate young researchers and students so that they become competitive world-wide. Our ultimate goal is the promotion of scientific knowledge and the attraction of international grants in the country.

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To me, H.F.R.I. funding would mean...

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The formation of a research group enables me to create a truly productive project, and to address questions of greater importance than those I would have been able to address if working alone in a research lab. I also consider that the HFRI funding offers young researchers a fair opportunity to develop ideas that are not already being developed in the country. This can translate into employment opportunities within the community and visibility within the society.

The Principal Investigator,
Kalliopi Dasyra

Funding

Amount: **199,980 €**

Duration: **36 months**

Foundation: **H.F.R.I.**

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