

MEDIA RELEASE

NEWS FROM THE UNIVERSITY OF TASMANIA

Tuesday 7 January 2014

Attention: Chiefs of Staff, News Directors



Find black holes from the comfort of your couch

Got a tablet or a laptop? Now you can discover black holes from the comfort of your couch.

An international group of researchers, including astronomers from the University of Tasmania, has launched a new citizen science project – called Radio Galaxy Zoo – that allows anyone to become a cosmic explorer.

By matching images of the sky at both infrared and radio wavelengths, users can help identify which galaxies possess active supermassive black holes.

The radio data come from the CSIRO's Australia Telescope and the American Very Large Array (VLA), while the infrared data are from NASA's WISE and Spitzer satellites.

Future images in the project will also include data from the Australian Square Kilometre Array Pathfinder (ASKAP) currently being built in Western Australia.

A black hole is an object for which gravity is so strong that even light cannot get out. Supermassive black holes drag in nearby material, growing to billions of times the mass of our sun and occasionally producing spectacular jets of material traveling nearly as fast as the speed of light.

These jets often can't be detected in visible light, but are seen using radio telescopes. The shapes and sizes of these jets contain clues about the growth of both black holes and galaxies over cosmic time.

While this all sounds a little technical, astronomers say getting involved to help identify supermassive black holes is easy.

"It takes about a minute to learn what to do," said CSIRO's Dr Julie Banfield, an Australian coordinator of the international project. "Then to actually work with the images takes only a few seconds each – perhaps a couple of minutes for the really tough ones.

"You just need to match up a couple of pictures and look for what you think is the galaxy at their centre."

UTAS Faculty of Science, Engineering and Technology researcher, Dr Stas Shabala, is a member of the Radio Galaxy Zoo science team.

“We have well and truly entered the era of Big Data. We will have literally tens of millions of sources that need classifications,” Dr Shabala said.

“The trouble is, automatic pattern recognition software can only take you so far. Many of the astronomical images we come across are just too complicated for computers. Pattern recognition by large numbers of people will be essential in these cases.”

Active black holes are the most energetic objects in the Universe. To understand how these black holes form, evolve, become active and interact with the galaxies which they inhabit, astronomers need to observe many of them at different stages of their lifecycles. To accomplish this, astronomers need help from the public to identify as many black hole/jet pairs as possible and associate them with their host galaxies.

With a large enough sample (from “citizen scientist” classifications), astronomers can pick out black holes at different stages and build a better picture of their origins.

Individuals who choose to participate will be part of a community of almost a million people who work in the “Zooniverse” – a set of citizen science projects covering everything from galaxy shapes, to cancer data, to whale songs.

Both ATCA and ASKAP are operated by the CSIRO. The Spitzer Space Telescope and WISE are operated by NASA, while the VLA is operated by the National Radio Astronomy Observatory.

<http://radio.galaxyzoo.org/> (For best results open website in Google Chrome.)

Information released by:

UTAS Communications and Media Office

Phone: (03) 6226 2691 or 0447 537 375

Email: Media.Office@utas.edu.au