In 2013 the Curtin Institute of Radio Astronomy (CIRA) gained the expertise of Professor Carole Jackson, a world-recognised astronomer known for her research into the Universe’s distant, yet powerful and highly luminous radio galaxies. Jackson joined CIRA upon receiving a prestigious Western Australian Fellowship, and is now leading a team established to investigate the extragalactic data acquired by the newly operational Murchison Widefield Array (MWA) radio telescope. A key aim is to understand the underlying properties and cosmic evolution of radio galaxies, each of which hosts a supermassive black hole at its centre. The most luminous of these distant objects are the quasars, which, at most observed frequencies, appear as point, or ‘stellar’, sources due to the dominance of the radio emission from the black hole.

To enable researchers to study the quasar’s other emission sources, the MWA is designed to operate at low frequencies (80–240 MHz), making it sensitive to emissions normally drowned out by the black hole. Jackson’s team will study radio galaxies detected by the MWA and assess the integrity of the data. Their research will inform the design of the Square Kilometre Array – in ... is working with colleagues in the Netherlands, UK, Italy and China to determine the best design for the telescope.

Jackson completed her PhD in radio astronomy at the University of Cambridge in 1998. Prior to joining Curtin she was the SKA Technologies Leader at CSIRO’s Telescope National Facility headquarters in Sydney.

The federal Department of Health’s recently updated Physical Activity and Sedentary Behaviour Guidelines have a firm message for Australia’s white-collar cohort: as well as planning daily exercise, we must reduce our time spent sitting.

The new guidelines connect perfectly with the current research focus of the Centre for Sport and Recreation Research (CSRR). The centre’s Director, Professor Marian Tye, has been investigating the link between the design of office buildings and sedentary behaviour of office staff.

“For the past two generations Australian jobs increasingly have become office-based. Office staff are mostly sedentary during the day, and so the risk of being overweight or obese, and developing associated health problems, is rising,” Tye says.

Despite sedentary work behaviour being well acknowledged as a health issue, the impact of workplace design on activity has received little attention.

“For example, there are no building standards that encourage ‘activity’. Workplace incentives are mostly peripheral, such as bike pods and change facilities,” Tye says.

She paints out that although architects may design workspaces to promote mobility and staff interaction, various factors can ruin the intention.

“For example, having to stop and swipe a security card whenever you turn a corner is a disincentive to navigating your way on foot through a building,” she explains.

“Gloomy, tucked-away stairwells do not encourage staff to reject the elevator and take the stairs instead,” Tye says.

Tye’s research aim is to inform architecture and building codes that enable a holistic approach to daily activity.

“Rather than having a “separation” approach to activity – cycle to work, sit for seven hours then cycle home – we need a mindset where work and activity are better integrated,” she says.

“This is a multi-discipline research challenge.” Consequently, she has brought together researchers from architecture, health and recreation fields to investigate how workplace design and practices influence active and sedentary behaviours.

The ‘Active Building Design team’ includes Dr Jonine Jancey from the Western Australian Centre for Health Promotion Research, Professor Peter Howat from the School of Public Health, and architectural consultant Dr Sarah McGann.

“For the past year we’ve been working with the WA Local Government Association as it relocates from a 30-year-old building to a new, purpose built five-star rated building,” Tye says.

“As a case study it allows us to assess how the different office-space designs affect the active and sedentary behaviours of the staff.”

The state government’s health promotion foundation, Healthway, provided funding for the planning phase of the project, and the health insurance company, HBF, is supporting the team’s current research.

“This is the first study of its kind, so it may pave the way for health and architecture disciplines to combine and inform spatial practices in office environments,” Tye says.

Tye is also forming links with The Bartlett School of Graduate Studies, the faculty of the built environment at University College London (UCL). Researchers from Curtin and UCL are collaborating in joint research on the reliability of instruments for detecting movement within buildings, including step count, use of stairs and sedentary behaviour.

research.humanities.curtin.edu.au/centres/csrr