

Akari's observations of galaxy M101

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This is a composite image of the spiral galaxy M101. The image shows the distribution of cold (blue) and warm (red) dust overlaid on the visible (green, showing distribution of stars) and far-ultraviolet (cyan, indicating the location of young stars) images of M101. Credits: Composite: JAXA, visible (green): the National Geographic Society, far-ultraviolet (cyan): GALEX/NASA

M101 is a spiral galaxy, 170 000 light-years in diameter. AKARI's new observations reveal differing populations of stars spread across its spiral arms.

Toyoaki Suzuki at the University of Tokyo conducted observations of M101 with AKARI at four infrared wavelengths (65, 90, 140, and 160 micrometres) using the Far-Infrared Surveyor (FIS) instrument.

Many young high-temperature stars populate the spiral arms, revealing the areas of star formation and warming the interstellar dust. This causes

the galaxy to shine at shorter infrared wavelengths. In contrast, the longer wavelengths show where the ‘cold’ dust is located. Normal stars, typically like our own Sun, warm this dust.

FIS data was compared to an image of M101 in the visible and far-ultraviolet. It shows that warm dust is distributed along the spiral arms, with many hot spots located along the outer edge of the galaxy. These spots correspond to giant star-forming regions. This is unusual because star formation is generally more active in the central parts of spiral galaxies.

The evidence points to M101 having experienced a close encounter with a companion galaxy in the past, dragging out gas from the hapless companion. The gas is now falling onto the outer edge of M101 at approximately 150 km/s, triggering the active star formation.

Source: ESA

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