A loopy new **look at M81**

This brand new image of Bode's Galaxy, M81, taken by American astrophotographer R Jay GaBany, reveals the truth about the highest altitude cloud that you'll ever find.

It was around 200 million years ago that two mighty galaxies, M81 and M82, came together in a close encounter that left the latter reeling with the fires of extreme star formation. A tenuous, lacy filament of gas called Arp's Loop appeared to still bridge the 125,000 light year gap between the pair, but with the help of this stunning new image of M81 from ace US astrophotographer R Jay GaBany, it has now been shown that Arp's Loop is actually a thin filament of gas and dust known as galactic cirrus, floating above the Milky Way and being gently illuminated by the light of our Galaxy.

Joining a team of astronomers from universities in Spain and Germany, Jay GaBany provided this wonderfully deep image during a 23-hour total exposure with a remotely operated 0.5 metre (20-inch) Ritchey–Chrétien telescope and a 16 megapixel camera at his Blackbird Observatory in New Mexico, USA. Combining his optical data with infrared observations from both the Infrared Astronomy Satellite (which first detected galactic cirrus in the 1980s at far infrared wavelengths of 60 and 100 microns) and the Spitzer Space Telescope, the team found that Arp's Loop shared many of the properties of galactic cirrus (so named because of its cloud-like appearance), with its far-infrared emission and dust-to-gas ratio indicting that it is made primarily from cold dust (infrared, of course, is perfect for highlighting emission from dusty objects). This was corroborated by wide-field images of the area taken by astrophotographers Jordi Gallego from Spain and Tony Hallas from the United States that clearly show the cirrus (see inset). The team concludes that Arp's Loop, discovered by the famed astronomer Halton Arp in 1965, therefore lies much closer to us than M81, which is 12 million light years distant. However, galactic cirrus can be somewhat opaque and it may be covering a real tidal tail, as suggested by the 'blue blobs' – massive clusters of young stars imaged by the Hubble Space Telescope and which appear to lie behind the Loop.

Arp's Loop, which is only apparent in the deepest images, is located 17 arcminutes to the north-east of M81's centre, and covers an area of 160 square arcminutes. The dark, unusually linear dust lane seen splitting M81's disc is actually the silhouette of denser portions of the Loop in front of M81. This dust lane is just about discernible on many amateur images of M81, so why not turn your imaging gear towards Ursa Major tonight and see if you too can catch a glimpse of wispy galactic cirrus?

Interested readers can see more of Jay GaBany's fabulous images at his website, www.cosmotography.com.

Keith Cooper is the Editor of Astronomy Now.

◀ Jordi Gallego's wide-field image of the M81–M82 galaxy group, showing the cloud-like galactic cirrus, which Gallego likes to call 'integrated flux nebulae' because they are illuminated from below by all the stars in our Galaxy.

■ R Jay GaBany's splendidly detailed image of the spiral galaxy M81 in Ursa Major. Arp's Loop can be seen running down the right hand side of the picture. The dwarf galaxy above M81 is UGC 5336.