rounding large spirals in other clusters, like Virgo or Coma. The presence of such a dwarf has still to be confirmed and explained. It is either the result of H I gas ejected from a parent galaxy by stripping, or it is in the process of being accreted by larger galaxies.

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IS THE STARBURST IN AGN REALLY TRIGGERED BY INTERACTION?

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It is shown that many observational data related to groups of galaxies, pairs of galaxies, environment of single spiral galaxies, and of Seyfert and Markarian galaxies, the presence or absence of a bar in the latter, the presence of signs of activity in single galaxies, radio and infrared emission of the mentioned objects, etc. contradict the widely accepted hypothesis of triggering of AGN by tidal interaction and merging of galaxies. Thus the interaction hypothesis fails to explain many observational facts and may not be valid. The solution to the problem may be found by invoking Ambartsumian's hypothetical super dense matter and its supposed ability to explode, though the physical properties of this matter are still completely unknown. In the history of physics there have been cases when the known laws (for example the laws of the conservation of energy, of the classical mechanics in the case of relativistic speeds) had been modified. By proving the existence of super dense matter, and evaluating its properties, a new solution may be found for the puzzle of the origin of AGN.

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HST OBSERVATIONS OF THE ULTRALUMINOUS IR GALAXIES

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We present some notes derived from recent *HST* observations of the Ultraluminous IR Galaxies. *Fine structure is seen within the central arcsecond of each galaxy in the sample.* The peculiar, disturbed morphologies that are seen on large (kiloparsec) scales are continued down to the smallest scales in the cores of these strongly starbursting systems. A variety of morphological features are noted, many of which are related to the recent intense *interaction-induced* star formation episode. These starburst-related features (e.g., numerous bright clumps of star formation, shells, and bubbles) are similar to those seen in previous *HST* imaging observations of the Cartwheel Ring Galaxy, the Antennae, NGC 7252, and other colliding galaxies.

IR02364–4751: Knotty sub-structure in dusty core. Multiple nuclei. Faint tidal tail extending from bottom left, curving to upper left. Two bright knots in tail. Intermediate brightness companion to the right.

IR06035–7102: Double nucleus. Extensive tidal tails. Numerous knots in tails and in cores. Bright envelope around system.

IR06206–6315: Double nucleus or possibly a broad dust lane bifurcating the nuclear region. One-armed spiral (tidal tail?), with knotty substructure. Several faint nearby companions. Bright envelope around system.

IR09425+1751: Nearly spheroidal, almost featureless. Small secondary nucleus (knot?) to the left of main nucleus. Some dust and clumpiness also to the left of nucleus. Very faint tidal tail extending up and curving to the right. Many intermediate-sized companions in wider field.

IR11095–0238: Mottled (knotty) core structure. Double nucleus or central dust lane. Dust features prominent above core and to the left. Well known tidal tail extending to the left. Several galaxies (2 groups?) in surrounding fields, plus several small nearby companions.

QDOTULIR1249–1009: Numerous bright knots and clumps around core and in tidal loop extending to the left. String of knots in tail appear to be in an infalling orbital configuration. Fainter amorphous tidal tail extending above nucleus. A few very faint companions in field.

QDOTULIR1315+0435: Double galaxy. Evidence for shells and loops. Very knotty substructure down into the central regions of each galaxy. Several faint nearby companions.

IR13428+5608 (Mrk273): Very prominent (well known) tail and dust lane. Dusty core region, with "spikes" similar to M82. Bright single nucleus.