Galaxy seen blasting its neighbor

by Bend_Weekly_News_Sources

In a never-before seen event, a powÂ-erÂ-ful jet from a galÂ-axÂ-yâ€™s giÂ-ant, cenÂ-tral black hole is pumÂ-melÂ-ing a nearÂ-by galÂ-axy, acÂ-cordÂ-ing to asÂ-troÂ-noÂ-mers. The beam may proÂ-foundly disÂ-turb planÂ-ets in its path and latÂ-er trigÂ-ger a burst of star formaÂ-tÂ-ion, they said.

A comÂ-posÂ-ite imÂ-age from sevÂ-erÂ-al obÂ-serÂ-vaÂ-toÂ-ries shows what asÂ-troÂ-noÂ-mers say is a jet from a black hole at the cenÂ-ter of a galÂ-axy, strikÂ-ing anÂ-othÂ-er galÂ-axy. The beam is difÂ-fiÂ-cult to see in the arÂ-ea where it emerges, from the bright zone in the midÂ-dle of the large galÂ-axy at lowÂ-er left. It beÂ-comes more apÂ-parÂ-ent where asÂ-troÂ-noÂ-mers say it is strikÂ-ing the secÂ-ond galÂ-axy, to the upÂ-per right of the first one. There, it creÂ-ates what apÂ-pears as a blue spot in on the lowÂ-er right of the smaller galÂ-axy. ConÂ-tinÂ-uÂ-ing onÂ-ward to the upÂ-per right of the picÂ-ture, the remÂ-nants of a beam apÂ-pear disÂ-rupted and deÂ-flectÂ-ed, reÂ-semÂ-bling a vast wisp of smoke. This is siÂ-mÂ-iÂ-lar to the way a stream of waÂ-ter from a hose will splay out afÂ-ter hitÂ-ting a wall at an anÂ-gle, reÂ-searchÂ-ers exÂ-plain. In the imÂ-age, daÂ-ta from sevÂ-erÂ-al waveÂ-lengths of light have been comÂ-bined: X-rays from ChanÂ-dra (colÂ-ored purÂ-ple); opÂ-tiÂ-cal and ulÂ-traÂ-vioÂ-let daÂ-ta from the HubÂ-ble Space TeÂ-leÂ-scope (red and orÂ-ange); and raÂ-dio emisÂ-sion from the Very Large ArÂ-ray (VLA) and MERÂ-LIN (blue) teÂ-leÂ-scopes. (ImÂ-age credÂ-it: X-ray: NAÂ-SA/CXÂ-C/CÂ-fA/D.EÂ- et al.; OpÂ-tiÂ-cal/UV: NAÂ-SA/STScI; RaÂ-diÂ-o: NSÂ-F/VLA/CÂ-fA/D.Evans et al., STFC/JBO/MERÂ-LIN)
NASAâ€™s ChanÂ-dra X-ray ObÂ-servÂ-aÂ-toÂ-ry, the reÂ-searchÂ-ers exÂ-plained, has reÂ-vealed that both gaÂ-laxÂ-iesâ€”orÂ-bitÂ-ing each othÂ-er in a sysÂ-tem called 3C321â€”have cenÂ-tral â€œsuÂ-per masÂ-siveâ€• black holes. The smaller galÂ-axy, asÂ-troÂ-noÂ-mers said, seems to have swung inÂ-to the path of a beam comÂ-ing from the black hole of the largÂ-er galÂ-axy.â€œWeâ€™ve seen many jeÂ-ts proÂ-duced by black holes, but this is the first time weâ€™ve seen one punch inÂ-to anothÂ-er galÂ-axy,â€• said Dan EvÂ-ans, a sciÂ-entÂ-ist at the HarÂ-vard-SmithÂ-sonÂ-ian CenÂ-ter for AsÂ-tÂ-roÂ-physÂ-ics in CamÂ-bridge, Mass. and leadÂ-er of the stuÂ-dy. â€œThis jeÂ-t could be causÂ-ing all sorts of probÂ-lems for the smaller galÂ-axy.â€•Black holes are obÂ-jects so dense that their gravitaÂ-tÂ-ion sucks in anÂ-yÂ-thing that comes too close, inÂ-cludÂ-ing light. But some nearÂ-by maÂ-teÂ-riÂ-al doesÂ-nâ€™t fall inÂ-side the black hole, and inÂ-stead gets ejected in beams, a pheÂ-nomÂ-eÂ-non beÂ-lieved to reÂ-sult from magÂ-netÂ-ic fields.The largÂ-est black holes are thought to lurk at the cenÂ-ters of gaÂ-laxÂ-ies. Jets from these are found to proÂ-duce coÂ-piÂ-ous radiaÂ-tÂ-ion, esÂ-peÂ-cially powÂ-erÂ-ful X-rays and gamma-rays, which can be deadly in large quanÂ-tiÂ-ties. The comÂ-bined efÂ-fects of this radiaÂ-tÂ-ion and parÂ-tÂ-iÂ-cles travÂ-elÂ-ing at near-light speed in the beam could seÂ-verely damÂ-age planÂ-eÂ-tary atÂ-moÂ-spheres in the jeÂ-tâ€™s path, asÂ-troÂ-noÂ-mers say; for inÂ-stance, proÂ-tecÂ-tive layÂ-ers of ozone in the upÂ-per atÂ-moÂ-spheres could be deÂ-stroyed.SuÂ-per Â-masÂ-sive black hole jeÂ-ts carÂ-ry torÂ-rents of enÂ-erÂ-gy far from their orÂ-iÂ-gin, and unÂ-derÂ-standÂ-ing them is a key goal for asÂ-tÂ-roÂ-physÂ-iÂ-cists. â€œWe see jeÂ-ts all over the unÂ-iverse, but weâ€™re still strugÂ-gling to unÂ-derÂ-stand some of their basÂ-ic propÂ-erÂ-ties,â€• said co-inÂ-vestÂ-igaÂ-tor MarÂ-tin HardÂ-casÂ-tle of the UnÂ-iversÂ-ity of HertÂ-fordÂ-shire in the U.K. The new findÂ-ing â€œgives us a chance to learn how theyâ€™re afÂ-fectÂ-ed when they slam inÂ-to someÂ-thing like a galÂ-axy and what they do afÂ-ter that.â€•The efÂ-fect of the jeÂ-t on the comÂ-panÂ-ion galÂ-axy is probably subÂ-sÂ-tanÂ-tial, reÂ-searchÂ-ers said, beÂ-cause the gaÂ-laxÂ-ies are very close by asÂ-tronomical stanÂ-dardsâ€”aÂ-bout 20,000 light years apart. A light-year is the disÂ-tance light travÂ-els in a year. They lie about the same disÂ-tance apart as Earth is from the cenÂ-ter of our galÂ-axy.The so-called â€œdeath starâ€• galÂ-axy in 3C321 was discoÂ-vered usÂ-ing both space and ground-based teleÂ-scopes, reÂ-searchÂ-ers said. A bright spot in raÂ-diÂ-o telÂ-eÂ-scope imÂ-ages, they reÂ-marked, shows where the jeÂ-t has struck the side of the galÂ-axy.A unÂ-ique asÂ-pect of the findÂ-ing, they added, is how short-lived the event is in cosÂ-mic terms: they esÂ-tiÂ-mate the jeÂ-t beÂ-gan hitÂ-ting the galÂ-axy a milÂ-lion years ago, a small fracÂ-tion of the sysÂ-temâ€™s lifeÂ-time. This would sugÂ-gest the alignÂ-ment is rare in the nearÂ-by uniÂ-verse. But the event may not be all bad news for the

vicÂ-timÂ-ized galÂ-axy, they added: the huge inÂ-flux of enÂ-erÂ-gy and radiaÂ-tÂ-ion could prompt many stars and planÂ-ets to form in the deÂ-strucÂ-tionâ€™s wake. The findÂ-ings are to apÂ-pear in the reÂ-search pubÂ-licaÂ-tÂ-ion AsÂ-tÂ-roÂ-physÂ-iÂ-cal JourÂ-nal.

Courtesy of World-Science

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