

Hubble sees light and dust in a nearby starburst galaxy

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Credit: ESA/Hubble and NASA

(Phys.org) —Visible as a small, sparkling hook in the dark sky, this beautiful object is known as J082354.96+280621.6, or J082354.96 for short. It is a starburst galaxy, so named because of the incredibly (and unusually) high rate of star formation occurring within it.

One way in which astronomers probe the nature and structure of galaxies like this is by observing the behavior of their dust and gas components; in particular, the [Lyman-alpha](#) emission. This occurs when electrons within a hydrogen atom fall from a higher energy level to a lower one, emitting light as they do so. This emission is interesting because this light leaves its [host galaxy](#) only after extensive scattering in the nearby gas—meaning that this light can be used as a pretty direct probe of what a galaxy is made up of.

The study of this Lyman-alpha emission is common in very distant galaxies, but now a study named LARS (Lyman Alpha Reference Sample) is investigating the same effect in galaxies that are closer by. Astronomers chose fourteen galaxies, including this one, and used spectroscopy and imaging to see what was happening within them. They found that these Lyman-alpha photons can travel much further if a galaxy has less dust—meaning that we can use this emission to infer how dusty the source galaxy is.

Provided by NASA

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