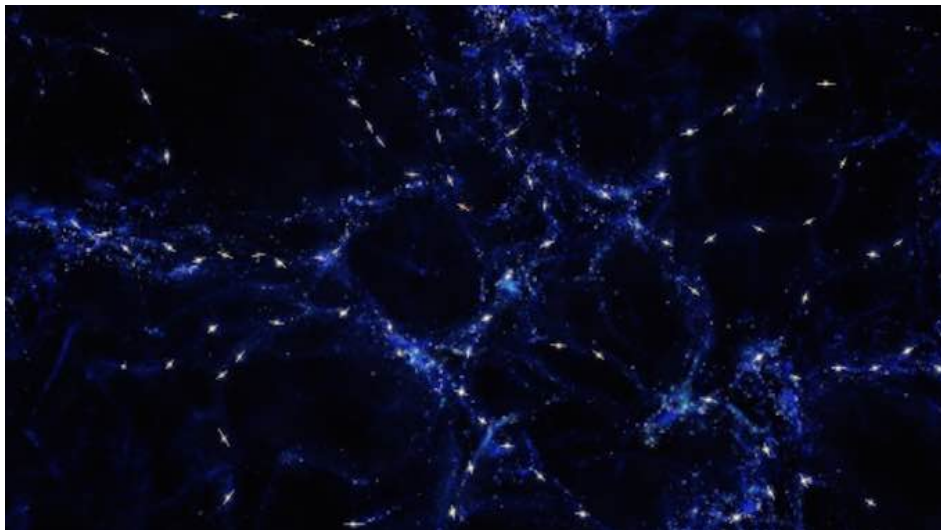


# VLT Telescope Reveals Mysterious Alignment of Quasars with the Universe's Large-Scale Structure

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Astronomers using the ESO's [Very Large Telescope](#) (VLT) in Chile have discovered an unexpected alignment of the spinning axes of supermassive black holes located billions of light-years apart. As if that discovery wasn't fascinating enough in itself, the team then delved a little deeper, finding that the quasars aren't just linked to each other, but are also aligned with the large-scale structure of the Universe itself.



An artist's impression of the alignment of quasars with the large-scale structure of the Universe (Image: ESO/M. Kornmesser)

The VLT's observations focused on quasars – galaxies with active supermassive black holes at their heart, surrounded by spinning disks of bright, high temperature material. This extremely hot material is thrown out in jets along the axes of

rotation.

To make the discovery, the team observed a sample of 93 quasars, all of which reside in such distant locations that the observed light comes from a time when the Universe was around a third of its current age. The team was unable to study the quasars directly, but instead measured the polarisation of the light from each object, using that data to identify the angle of its spin.

The astronomers first discovered that the axes of rotation, as seen in the direction of the high-speed jets, were aligned with each other. Considering the billions of light-years that separate the objects, that alone is a striking discovery, but further observations revealed an even greater level of alignment.

When you look at the Universe on a wide enough scale, you find that the distribution of galaxies is not even, but instead forms a web of clumps and filaments surrounding gigantic near-empty voids. According to the VLT findings, not only are the rotational axes of quasars aligned with each other, but they also tend to be arranged in parallel with this cosmic distribution of material, known as the large-scale structure...

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