Researchers study exciton dynamics at unprecedented resolution
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results confirm theoretical predictions that prior researchers had been unable to experimentally verify.

"The 2.5-nanometer spatial resolution of our technique is groundbreaking," says Professor Hidemi Shigekawa, senior author. "At this resolution, we confirmed that in the tungsten diselenide region, the rate of exciton-exciton annihilation was 0.10 ± 0.02 square centimeters per second, and was modulated by local nanostructures."

Based on the research described here, excitons will become an essential tool to remove many current barriers to remote communication. In the future, that is expected to expand real-life applications of advanced optical communications—such as seamless business and financial data-sharing that speeds up operations, faster search-and-rescue operations based on artificial intelligence image-processing of airborne drone data, and safer driverless vehicles.


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