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Landau-level quantization of the yellow excitons in cuprous oxide

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Lately, the yellow series of P -excitons in cuprous oxide could be resolved up to the principal quantum number $n = 25$. Adding a magnetic field, leads to additional confinement normal to the field. Thereby, the transition associated with the exciton n is transformed into the transition between the electron and hole Landau levels with quantum number n , once the associated magnetic length becomes smaller than the related exciton Bohr radius. The magnetic field of this transition scales roughly as n^{-3} . As a consequence of the extended exciton series, we are able to observe Landau level transitions with unprecedented high quantum numbers of more than 75.

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