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Electromagnetic radiation emanating from the molecular nano-magnet Fe_8 AMIT KEREN, Department of Physics, Technion - Israel Institute of Technology, Haifa 32000, Israel, OREN SHAFIR, Physics Department, Technion-Israel Institute of Technology, Haifa 32000, Israel — Photons emitted by transition between the discrete levels of single molecular magnets have an interesting property: their wave length can be similar to that of the sample size. This is the elementary condition for Dicke's super-radiance. In this radiative process a short intense pulse of light from a molecular system appears as a result of enhanced spontaneous emission rate due to interactions via the electro-magnetic field. Consequently, several investigators have been looking for this type of radiation in the molecular magnet Mn_{12} , where energy bursts were reported after magnetic avalanches. We investigate the same phenomenon in the Fe_8 molecule. Unlike in Mn_{12} we found energy bursts each time there is a jump in the magnetization, confirming their quantum nature. A series of tests indicated that photons carry out the energy. These photons obey the elementary conditions for super-radiance.

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