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To whom it may concern,

Maria Kuznetsova presents here a very well documented experimental investigation of the evolution of the Hanle effect when time passes in case of indium gallium arsenide quantum dots. This works inserts in the vein of best scientific research activities related to spin physics using III-V semiconductors nanostructures, regularly reported worldwide.

The research topics matches particularly well to the ensemble of today's scientific questions. The electronic bibliographic investigation validates this statement: The web of science indicates that Maria Kuznetsova co-authored four high level publications which are attached to her PhD document, two of them having been published in major high scientific level exigent Russian journal, the remaining two being published in the Condensed Matter and Materials Physics section of Physical Review B, one in the rapid communications section of this journal.

The four above-mentioned publications testify of the high degree of novelty of the experimental measurements realized by Maria Kuznetsova in that very crowded field. The excellence of the experimental part is re-enforced by the quality of the data interpretation. This science is subtle and delicate. The investigation of spin physics, nuclear spin relaxation has been examined in depth in the host laboratory for many years, which produced a lot of extremely important theoretical predictions. Carefully digging in that documented library, Maria Kuznetsova could develop an innovative and original interpretation of the time evolution of the nuclear polarization for both its longitudinal and transverse components via an elegant statistical

model of nuclear spin fluctuations, which significantly goes beyond the standard spin cooling theory.

Finally, Maria Kuznetsova measures the contributions of the different isotopes of gallium and indium via resonant circularly polarized optical modulated pumping experiments. The data interpretation requires in order to optimize the agreement between theory and experiment, to include a weak residual strain field which is in turn not so surprising since InGaAs and GaAs have different lattice parameters and the InGaAs inclusions in GaAs matrix are far from being exactly spherical in shape leading, as quoted by Maria Kuznetsova, to the formation of a symmetry-breaking strain field which mixes the initial electronic states.

In summary the PhD document written by Maria Kuznetsova gathered a lot of interesting new phenomena and her results pave the way to very interesting investigations in the area of optically-induced Nano-Nuclear Magnetic Resonance. During her formation she faced a lot of theoretical concepts and experimental set-ups, which she managed to accommodate the subtleties. This results today in a solid PhD work, manuscript and knowledge for which I have to express my congratulations.

I wonder what such investigation would give in case of wurtzitic semiconductor-based quantum dots, especially in line with the high value of the band gap, which might make the possibility of observing similar effects at high temperatures. It also deserves may be to be thinking about the isotopic issue in case of Ga and N deserves being examined. Last the wurtzite symmetry is ruled by a representation table significantly different from the zinc blende one, which changes things. A lot of questions have been opened at the issue of this pioneering work.

According to my experience in France and other countries of Europe, My opinion is that Maria Kuznetsova can be graduated Doctor from Saint Petersburg State University in Physics.

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