## Exciton-assisted TMOKE in CdMnTe/CdMgTe quantum well structures

Felix Spitzer<sup>1</sup>, Olga Borovkova<sup>2</sup>, Ilya A. Akimov<sup>1,3</sup>, Vladimir I. Belotelov<sup>2,4</sup>, Maciej Wiater<sup>5</sup>, Tomasz Wojtowicz<sup>5</sup>, Grzegorz Karczewski<sup>5</sup>, Dmitri Yakovlev<sup>1,3</sup> and Manfred Bayer<sup>1,3</sup>

 <sup>1</sup>Experimentelle Physik 2, TU Dortmund University, D-44221 Dortmund, Germany <sup>2</sup>Russian Quantum Center, Skolkovo, Russia
<sup>3</sup>Ioffe Institute, Russian Academy of Sciences, 194021 St. Petersburg, Russia <sup>4</sup>M.V. Lomonosov Moscow State University, Moscow, Russia
<sup>5</sup>Institute of Physics, Polish Academy of Sciences, PL-02668 Warsaw, Poland

Magnetic optical response of diluted semiconductor CdMnTe/CdMgTe quantum well (QW) structures has been studied using Fourier imaging spectroscopy. In angular and wavelength resolved measurements, the transversal magneto-optic Kerr effect (TMOKE) grants access to the in-plane component of the magnetization and in combination with polar MOKE can be used for spin tomography.



Figure 1: TMOKE in spectral region of light (LH) and heavy hole (HH) excitonic resonances

Here we report on an exciton-assisted enhancement of the TMOKE, induced by the giant Zeeman effect of excitons in diluted magnetic semiconductors. In the studied structures, the 10nm thick CdMnTe QW is sandwiched between non-magnetic CdMgTe barriers. The concentration of Mn in the magnetic layer is about 2.5%. In QW the energy structure of excitons is defined by the quantization of the carriers in the direction perpendicular to the sample plane. This allows to separate the contributions from light and heavy hole states in the spectral dependence of TMOKE. The measurements have been performed at low temperatures of about 10 K and a magnetic field of about 580 mT perpendicular to the incidence plane of light. Two-order enhancement of the TMOKE is observed in the spectral region of the excitonic resonances, with an effect of up to 1% or 2%, depending on the structure, at an incidence angle of 21°.

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