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**Magnetic and Optical Anisotropy in Epitaxial Cobalt Films** NIKOLAI YAKOVLEV, Institute of Materials Research and Engineering, ANDREW KAVEEV, NIKOLAI SOKOLOV, Ioffe Physico-Technical Institute — Cobalt films were grown by molecular beam epitaxy on CaF<sub>2</sub> buffer layers on silicon and showed a variety of magnetic and optical effects. When the substrate is Si(111), CaF<sub>2</sub> grows as flat layer with (111) surface and Co grows on it in face centered cubic lattice. Magneto-optical Kerr effect (MOKE) from these structures is isotropic in plane. When the substrate is Si(100), CaF<sub>2</sub> growth direction is [110] due to unique properties of CaF<sub>2</sub>/Si(100) interface. Then CaF<sub>2</sub> surface has grooves with {111} facets and cobalt grown on it has in-plane magnetic anisotropy with easy axis along the grooves. The dependence of remanence magnetisation and coercivity on azimuthal angle (between the grooves and field) follows single domain model except the range between 80 to 90 degrees - there is a peak related to crystallographic anisotropy. MOKE from these structures can have different sign depending on incidence angle; this is consistent with calculations of multilayer model. We found that the sign of MOKE can change also versus azimuthal angle, which was unexpected. Physics behind this phenomenon will be presented.

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