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Abstract for an Invited Paper
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Ultracold atomic gases in optical lattices: mimicking condensed matter and beyond[1]

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I will present a short review of the newest developments of physics of ultracold atomic gases in optical lattices. After a short introduction about possibilities offered by such systems I will describe recent progress in physics of ultracold dipolar gases (generation and engineering of metastable states), ultracold disordered gases (interplay disorder-interactions, random field induced order), and ultracold gases inside an optical resonator (overlapping Mott zones). I will comment on challenging open questions concerning preparation, manipulation and detection of such systems, as well as possible applications in quantum information and precision metrology.

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