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Degenerate Quantum Gases of Strontium SIMON STELLMER, 1, MENG KHOON TEY, 2, MARK PARIGGER, 1, RUDOLF GRIMM, 1,2, FLO-RIAN SCHRECK, 2, INSTITUT FUER EXPERIMENTALPHYSIK AND ZEN-TRUM FUER QUANTENPHYSIK, UNIVERSITAET INNSBRUCK TEAM, IN-STITUT FUER QUANTENOPTIK UND QUANTENINFORMATION TEAM — The alkaline-earth elements differ significantly from the alkalis, namely by the presence of metastable triplet states, narrow optical transitions, and a decoupling of nuclear and electronic spin in the ground state. Notably, there exists a fermionic isotope of strontium with a large nuclear spin. Recent proposals use these features for novel schemes of quantum computation and for simulations of lattice spin models. These proposals require deeply degenerate and well-controlled samples of atoms in optical lattices. As a prerequisite of such studies, we have achieved Bose-Einstein condensation of bosonic isotopes of strontium, spin-polarized Fermi gases, and combinations of the two, and we will present new work on the bosonic isotopes towards the realization of quantum simulation schemes.