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The project *Conformal symmetry in the theory of particle physics and gravity* investigates properties of the so called Conformal Standard Model. The theory extends the presently known theory of elementary particles, i.e. the Standard Model, which is in beautiful agreement with all known experimental observations but has certain drawbacks especially in its application to cosmology. The objective of the project is to prove (or disprove) that the Conformal Standard Model avoids these drawbacks: has a candidate for cold dark matter, can explain matter-antimatter asymmetry and is quantum mechanically stable. The very important fact about the Conformal Standard Model is that it predicts the existence of new particles what can be tested in the near future at the LHC – its eventual discovery would be a breakthrough in both the theoretical and experimental particle physics. The second part of the project is to check whether a certain property of all theories of particle physics, so called conformal anomaly, would be disastrous for the usual (and extremely successful) Einstein theory of gravity. If it is the case we would have to impose the condition of its vanishing in all existing and proposed extensions of the Standard Model. Such a condition would be a purely theoretical but extremely stringent restriction on the future lines of research.

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