13 Summary and Conclusions

Previously known as “charge clusters”, “EVs”, or “strange radiation”, a novel aggregation state of matter has been characterized and named “condensed plasmoids”. A quantum-mechanical model of CPs was built, a computer program was designed, and computer calculations were used to obtain the properties of CPs.

The computed properties are well-aligned with many experimental findings in LENR, including the strange tracks left by CPs on the surfaces of electrodes and x-ray films.

CPs are compressing matter magnetically to such high densities that atomic nuclei can tunnel through the Coulomb barrier, thereby enabling fusion.

Gamma rays of fusion-excited nuclei are suppressed by the high current density inside of CPs via near-field interactions. The nuclear energy is “down-converted” to many electrons ending as heat.

Possible routes of the nuclear reactions have been explored. There are many ways to explain the generation of helium-4 from deuterium and other “fuel” elements, without assuming d-d fusion. If the proposed hypotheses will turn out to be true, they are solving the most puzzling questions of LENR research.

This document derives verifiable predictions from the theory on CPs. It assesses potential dangers of LENR and proposes shielding mechanism required for the safe operation of these devices.

The current modeling is seen as being incomplete, because no length stability of CPs was found. This is probably cased by inaccuracies in the relativistic Hamiltonian. The theory on CPs (even in its current, incomplete form) will potentially help optimizing LENR generators as commercial energy sources. At least a new direction is proposed for subsequent LENR research.