Negative energy topological light (phase conjugate laser waves) rays provide the fundamental control mechanism in the TGD based model of living matter and appears in practically every mechanism of consciousness as a basic step. Zero energy ontology provides the theoretical justification for the notion of negative energy particles. This is however not yet the whole story. One should also identify mechanisms allowing to control the generation of the negative energy topological light rays: direct transformation of p-adic MEs to negative energy MEs is probably not enough.

A possible solution of the problem came from an quite unexpected direction. It was the attempt to understand the physics behind the visions of Tesla which led to an identification of a very general mechanism of this kind. I had already earlier proposed that Tesla's scalar wave pulses might be described in terms of solutions of field equations in TGD framework but the physical interpretation had remained obscure.

In this chapter the general vision possibly allowing to understand the findings of Tesla and others relating to binary coils and Tesla transformers are discussed. The basic idea is that the rapid acceleration of charges induced by scalar wave pulses induces generation of negative energy topological light rays as time reversed counterpart of brehmstrahlung. Candidates for the solutions of field equations describing Tesla's scalar wave pulses are discussed first. Various strange findings of Tesla are discussed at a general level using the resulting over all picture. The solution ansatz is however approximate and need not be a preferred extremal of K\"ahler action. Another model for the scalar waves is as massive photon like states which correspond to MEs with opposite 3-momenta and same helicity and therefore non-vanishing rest energy and vanishing spin. The Lorentz boosts of this solution give scalar photons.

The chapter ends with the model for the causal anomalies observed in

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tunnelling of photons through potential barriers.