In this chapter the notion of fermion propagator in TGD framework is discussed. It is found that the construction is much more than a mere computational challenge. There are two alternative approaches. Fermionic propagation could correspond to a) a 4-D or lower-dimensional propagation at the space-time level for the induced spinor fields as analog of massless propagation or b) to 8-D propagation in H between points belonging to the space-time surface.

For the option b) the separate conservations of baryon and lepton number requires fixed H-chirality so that the spinor mode is sum of products of M^4 and CP_2 spinors with fixed M^4 and CP_2 chiralities whose product is +1 or -1. This implies that M^4 propagation is massless. The Euclidean signature of CP_2 in turn suggests that there is no propagation in CP_2 and the CP_2 projections s_1 and s_2 for the ends of the propagator line are the same. This allows a very simple form for the matrix elements of the propagator and the condition $s_1 = s_2$ implies that the propagation from s_1 is possible to a discrete set of points s_2. This has direct relevance for the understanding of color confinement and more or less implies the intuitively deduced TGD based model for elementary particles.

Although the option a) need not provide a realistic propagator, it could provide a very useful semiclassical picture. If the condition $s_1 = s_2$ is assumed, fermionic propagation along light-like geodesics of H is favored and in accordance with the model for elementary particles. This allows a classical space-time picture of particle massivation by p-adic thermodynamics and color confinement.

Also the interpretational and technical problems related to the construction of 4-D variants of super-conformal representations having spinor modes as ground states and to the p-adic thermodynamics are discussed.