The twistor lift of TGD, in which $H = M^4 \times CP_2$ is replaced with the product of twistor spaces $T(M^4)$ and $T(CP_2)$, and space-time surface $X^4 \subset H$ with its 6-D twistor space as 6-surface $X^6 \subset T(M^4) \times T(CP_2)$, is now a rather well-established notion and $M^8 - H$ duality predicts it at the level of M^8.

Number theoretical vision involves $M^8 - H$ duality. At the level of H the quark mass spectrum is determined by the Dirac equation in H. In M^8 mass squared spectrum is determined by the roots of the polynomial P determining space-time surface and are in general complex. By Galois confinement the momenta are integer valued when p-adic mass is used as a unit and mass squared spectrum is also integer valued. This raises hope about a generalization of the twistorial construction of scattering amplitudes to TGD context.

It is always best to start from a problem and the basic problem of the twistor approach is that physical particles are not massless.

1. The intuitive TGD based proposal has been that since quark spinors are massless in H, the masslessness in the 8-D sense could somehow solve the problems caused by the massivation in the construction of twistor scattering amplitudes. However, no obvious mechanism has been identified. One step in this direction was the realization that in H quarks propagate with well-defined chiralities and only the square of Dirac equation is satisfied. For a quark of given helicity the spinor can be identified as helicity spinor.

2. M^8 quark momenta are in general complex as algebraic integers. They are the counterparts of the area momenta x_i of momentum twistor space whereas H momenta are identified as ordinary momenta. Total momenta of Galois confined states have as components ordinary integers.

3. The M^8 counterpart of the 8-D massless condition in H is the restriction of momenta to mass shells $m^2 = r_n$ determined as roots of P. The M^8 counterpart of Dirac equation in H is octonionic Dirac equation, which is algebraic as everything in M^8 and analogous to massless Dirac equation. The solution is a helicity spinor $\tilde{\lambda}$ associated with the massive momentum.

The outcome is an extremely simple proposal for the scattering amplitudes.

1. Vertices correspond to trilinears of Galois confined many-quark states as states of super symplectic algebra acting as isometries of the "world of classical worlds" (WCW). Quarks are on-shell with H momentum p and M^8 momenta x_i, x_{i+1}, $p_i = x_{i+1} - x_i$. Dirac operator $x_i^k \gamma_k$ restricted to fixed helicity L, R appears as a vertex factor and has an interpretation as a residue of a pole from an on-mass-shell propagator D so that a correspondence with twistorial construction becomes obvious. D is expressible in terms of the helicity spinors of given chirality and gives two independent holomorphic factors as in case of massless theories.

2. MHV construction utilizing $k = 2$ MHV amplitudes as building bricks does not seem to be needed at the level of a single space-time surface. One can of course ask, whether the M^8 quark lines could be regarded as analogs of lines connecting different MHV diagrams replaced with Galois singlets. The scattering amplitudes would be rational functions in accordance with the number theoretic vision. The absence of logarithmic radiative corrections is not a problem: the coupling constant evolution would be discrete and defined by the hierarchy of extensions of rationals.

3. The scattering amplitudes for a single 4-surface X^4 are determined by a polynomial.

The integration over WCW is replaced with a summation of polynomials characterized by rational coefficients. Monic polynomials are highly suggestive. A connection with p-adicization emerges via the identification of the p-adic prime as one of the ramified primes of P. Only (monic) polynomials having a common p-adic prime are allowed in the sum. The counterpart of the vacuum functional $exp(-K)$ is naturally identified as the discriminant D of the extension associated with P and p-adic coupling constant evolution emerges from the identification of $exp(-K)$ with D.