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The basic notions behind  $M^8 - H$  duality.

1. Associativity and co-associativity
  - (a) Quaternionic (associative) 4 plane of 8-D octonionic space  $O$  containing preferred complex plane  $E^2$ .
  - (b) Co-quaternionic (co-associative) 4-plane of  $O$ : now orthogonal complement is quaternionic and contains preferred complex plane  $E^2$ .
2. The space of quaternionic planes of  $O$  containing a fixed complex plane  $E^2$  is parameterized by  $CP_2$  generalizing to co-associative context: now normal planes containing fixed  $E^2$  are parameterized by  $CP_2$ .
  - (a) quaternionic (associative) 4-surface in  $O$  has at each point quaternionic plane containing fixed complex plane  $E^2$ .
  - (b) Co-quaternionic (co-associative) 4-surface is defined analogously.
3. This generalizes also to complex context.
  - a) complex (commutative) 4-surface in  $O$  has at each point complex plane containing fixed complex plane  $E^2$ .
  - b) Co-complex (co-associative) 2-surface is defined analogously.
  - c) The generalization Minkowskian situation is obvious using hyper-complex numbers.