Generalising Calabi--Yau geometries

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We consider the geometry of generic flux backgrounds preserving D=4, N=2 supersymmetry in both eleven-dimensional and type II supergravity. Using "exceptional" generalised geometry, supersymmetry is shown to be equivalent to the existence of a pair of integrable generalised structures that interpolate between symplectic, complex and hyper-Kahler geometry. The integrability conditions arise as moment maps for the combined action of the diffeomorphism and flux gauge-symmetry groups.