

Hyperkähler varieties

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First lecture: Hyperkähler manifolds.

- Definition, $K3$ surfaces. First higher-dimensional examples. Lines on cubic 4-folds.
- Twistor lines. Small deformations.
- Local period map. The Beauville-Bogomolov quadratic form (examples).
- The Kähler cone of a HK. The global period map.

Second lecture: Double EPW-sextics.

- Double EPW-sextics and their periods.
- Numerical Hilbert squares of $K3$ surfaces.

Third lecture: Correspondences between $K3$ surfaces.

- Correspondences and their action on the Chow group.