Degenerations of linear systems on $K3$ surfaces
Joint work with Antonio Laface

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We introduce a technique to degenerate $K3$ surfaces and linear systems through fat points in general position on $K3$ surfaces.

Using this degeneration we show that on generic $K3$ surfaces it is enough to prove that linear systems with one fat point are non-special in order to obtain the non-speciality of homogeneous linear systems through $n = 4^u 9^w$ fat points in general position.

Moreover, we use this degeneration to obtain a result for homogeneous linear systems through $n = 4^u 9^w$ fat points in general position on a general quartic surface in $\mathbb{P}^3$.