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"Incoherent components of the Toric Hilbert scheme"

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The classical Hilbert scheme is the scheme whose closed points are all subschemes of with the same Hilbert function. That is, for S=k[x0,...,xn] and an ideal I&sub#subset;S the function H(t) = (S/I)_t whose value at d is the dimension over k of the degree t part of S/I. Endowing the ring S with a multigrading, i.e. the degree of xi is ai &isin#in;, we construct the multigraded Hilbert function. This is the analogon to the classical Hilbert function with degrees in for some d > 0. Then one can consider all ideals I&sub#subset;S with the same multigraded Hilbert function, these are the closed points of the multigraded Hilbert scheme. We consider the simplest case, taking the semigroup ={&sum#sum;ni ai | ni &isin#in;} and the multigraded Hilbert function

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