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# Monads and the Serre construction of vector bundles on abelian threefolds

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Moduli spaces for stable vector bundles on elliptic curves are themselves elliptic curves (Atiyah); moduli spaces for stable vector bundles/sheaves on abelian surfaces are holomorphic symplectic varieties (Mukai). What geometry can one expect for abelian threefolds?
Borrowing well established constructions from the study of vector bundles on $\mathbb{P}3$, namely the Serre correspondence and Barth–Hulek type monads, I will give some examples of stable rank two bundles on generic principally polarized abelian threefolds. This leads in particular to an explicit, birational description of a 13-dimensional, ruled component of the moduli space.
One motivation, for studying moduli spaces of stable sheaves on abelian threefolds, is the existence of Donaldson-Thomas invariants, which are attached to the canonical perfect symmetric obstruction theory. Time permitting, I will say a few words about Donaldson-Thomas invariants in this setting, and give some examples.

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