

# Formal Proof of Polynomial Models

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Proving the correctness of the implementation of Taylor models using floating-point arithmetic, as it is done in COSY for instance, involves several technical lemmas, tricky handling of corner cases, etc. Being convinced that these proofs are correct can resemble an act of faith. To remove any doubts on the correctness of the proofs, one often resorts to checking them using a formal proof checker. We will show how Coq was used to formally check proofs on the implementation of polynomial models using floating-point arithmetic.

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