DAVID ZYWINA, Institute for Advanced Study
Modular function fields of genus 0

We report on an ongoing project to explicitly describe those modular functions f for which the modular j-invariant can be written in the form $J(f)$ for some rational function $J(t) \in \mathbb{Q}(t)$. Such modular functions play a prominent role in number theory. We give several examples and discuss an application concerning the possible Galois representations arising from elliptic curves.