

Generic functions  $f(x_1, \dots, x_n)$  are extremely complicated and near impossible for symbolic regression to discover. However, functions appearing in physics and many other scientific applications often have some of the following simplifying properties that make them easier to discover:

- (1) Units:  $f$  and the variables upon which it depends have known physical units.
- (2) Low-order polynomial:  $f$  (or part thereof) is a polynomial of low degree.
- (3) Compositionality:  $f$  is a composition of a small set of elementary functions, each typically taking no more than two arguments.
- (4) Smoothness:  $f$  is continuous and perhaps even analytic in its domain.
- (5) Symmetry:  $f$  exhibits translational, rotational, or scaling symmetry with respect to some of its variables.
- (6) Separability:  $f$  can be written as a sum or product of two parts with no variables in common.