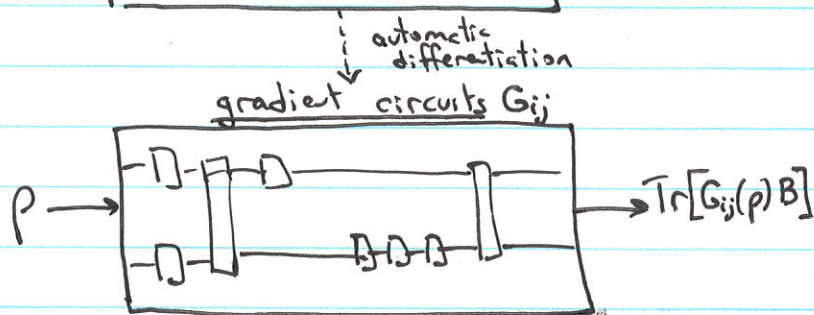
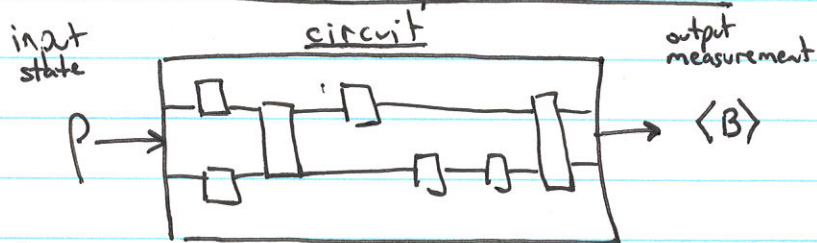


# OpenQML

Basic abstraction: "Grey box" model for quantum circuits

- assumes that gpu/simulator carries out a series of transformations from a fixed supported set
- transformations can have free parameters, input states and measurements are fixed (no params, but can vary between models)
- this abstraction allows our library to perform automatic differentiation on quantum circuits



$$\frac{\partial \langle B \rangle}{\partial \theta_i} = \sum_j c_j \text{Tr}[G_{ij}(\rho)B]$$

- Core features:
- provides common, device-independent syntax for programmable quantum hardware/simulators
  - provides automatic differentiation of quantum circuits by determining all the circuits necessary for getting gradients

- Other important functionality:
- provides built-in tools for optimization
  - provides plug-ins (& plug-in templates) within library that target different devices/simulators

- Extra features:
- provides high-level tools for common modelling tasks (optimization, supervised, generative)