Syntax for specification

$$
\begin{aligned}
Spec &::= \texttt{Spec \{}\ Configs\ \texttt{\}} && (1)\\
Configs &::= Entry\ \texttt{,}\ Configs \mid [] && (2)\\
Entry &::= \texttt{'qubit':}\ \mathbb{N} && (3)\\
&\mid \texttt{'initial':}\ VExpr && (4)\\
&\mid \texttt{'final':}\ VExpr && (5)\\
&\mid \texttt{'circuit:'}\ \text{string} && (6)\\
VExpr &::= VExpr\ +\ VExpr && (7)\\
&\mid VExpr\ -\ VExpr && (8)\\
&\mid Expr\ *\ VExpr && (9)\\
&\mid VExpr\ /\ Expr && (10)\\
&\mid -\ VExpr && (11)\\
&\mid |\mathbb{N}_b\rangle && (12)\\
&\mid \texttt{(}\ VExpr\ \texttt{)} && (13)\\
Expr &::= Expr\ Binop\ Expr && (14)\\
&\mid \texttt{(}\ Expr\ \texttt{)} && (15)\\
&\mid Uniop\ \texttt{(}\ Expr\ \texttt{)} && (16)\\
&\mid \mathbb{N} && (17)\\
&\mid \texttt{exp(}\ Expr\ \texttt{)} && (18)\\
&\mid \texttt{pi} \mid \texttt{e} \mid \texttt{i} && (19)
\end{aligned}
$$

Where

- $LParen$ and $RParen$ are a pair of any brackets (parenthesis, square brackets or curly braces). However, they must come in pairs.
- $\mathbb{N}$ is any natural number characters, including superscripts and subscripts.
- $Binop$ are the 4 arithmetic operations and power `^`
- $Uniop$ are $\sqrt{}$, and trigonometric functions ($\sin$, $\cos$, $\tan$) and their inverses

For example, these are all valid syntax:

- `¹/√2 |0⟩ + 1/sqrt(2)|1>`
- `sin(π) |0⟩ + cos(pi)|1>`
- `¹/₂⁸ + 1/(2 ^ 8)`