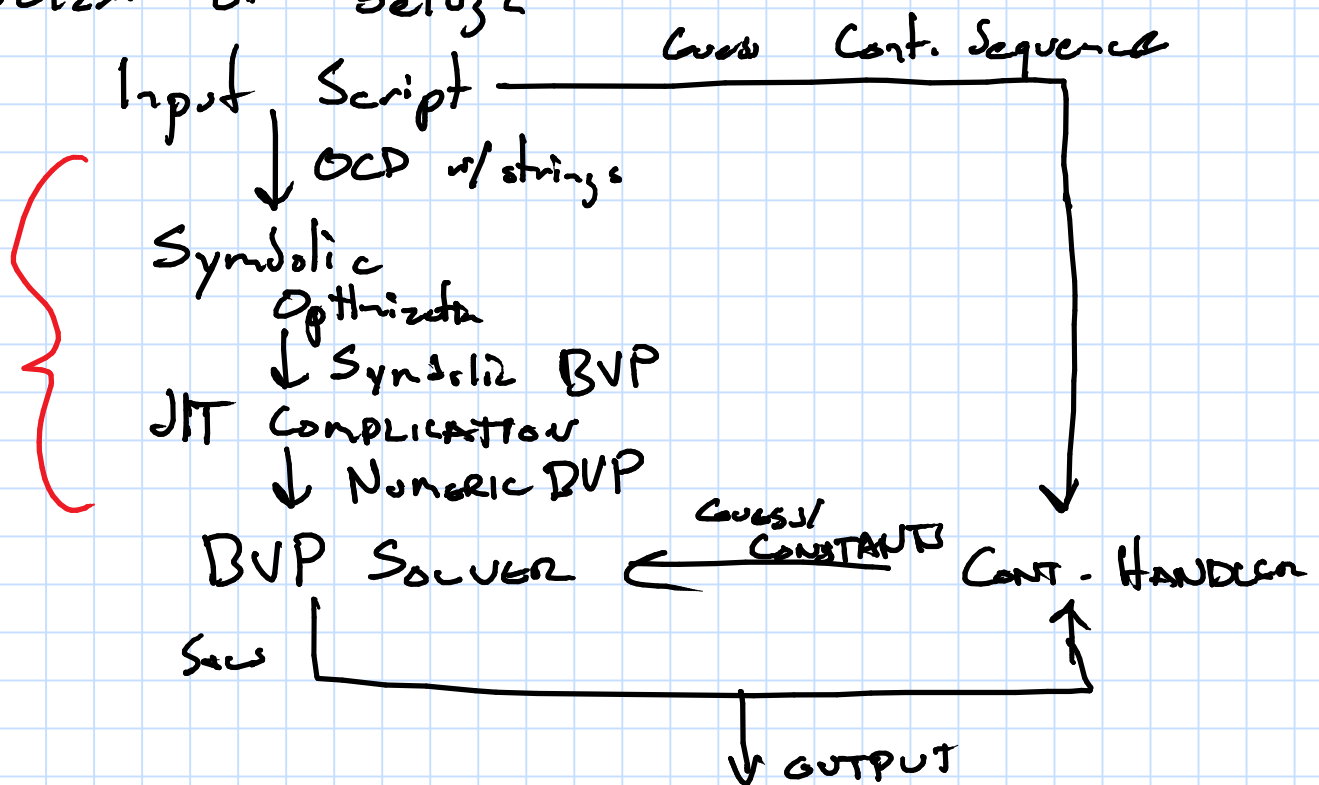


## Symbolic Math and JIT Compilation

- Recall the 3 reasons why indirect methods were not widely used

- ① Deriving analytical expressions for complicated non-linear dynamics is difficult
- ✓ 2. The region of convergence for BVPs can be very small Continuation Methods
3. Solving problems with complex features like path constraints is prohibitively challenging

Flowchart of beluga



<u>Issues</u>	<u>Solutions</u>
- User doesn't want to do math	- SymPy
- Evaluating symbolic expressions is very slow	- Lambdify
- Python is slow	- JIT Compilation through Numba