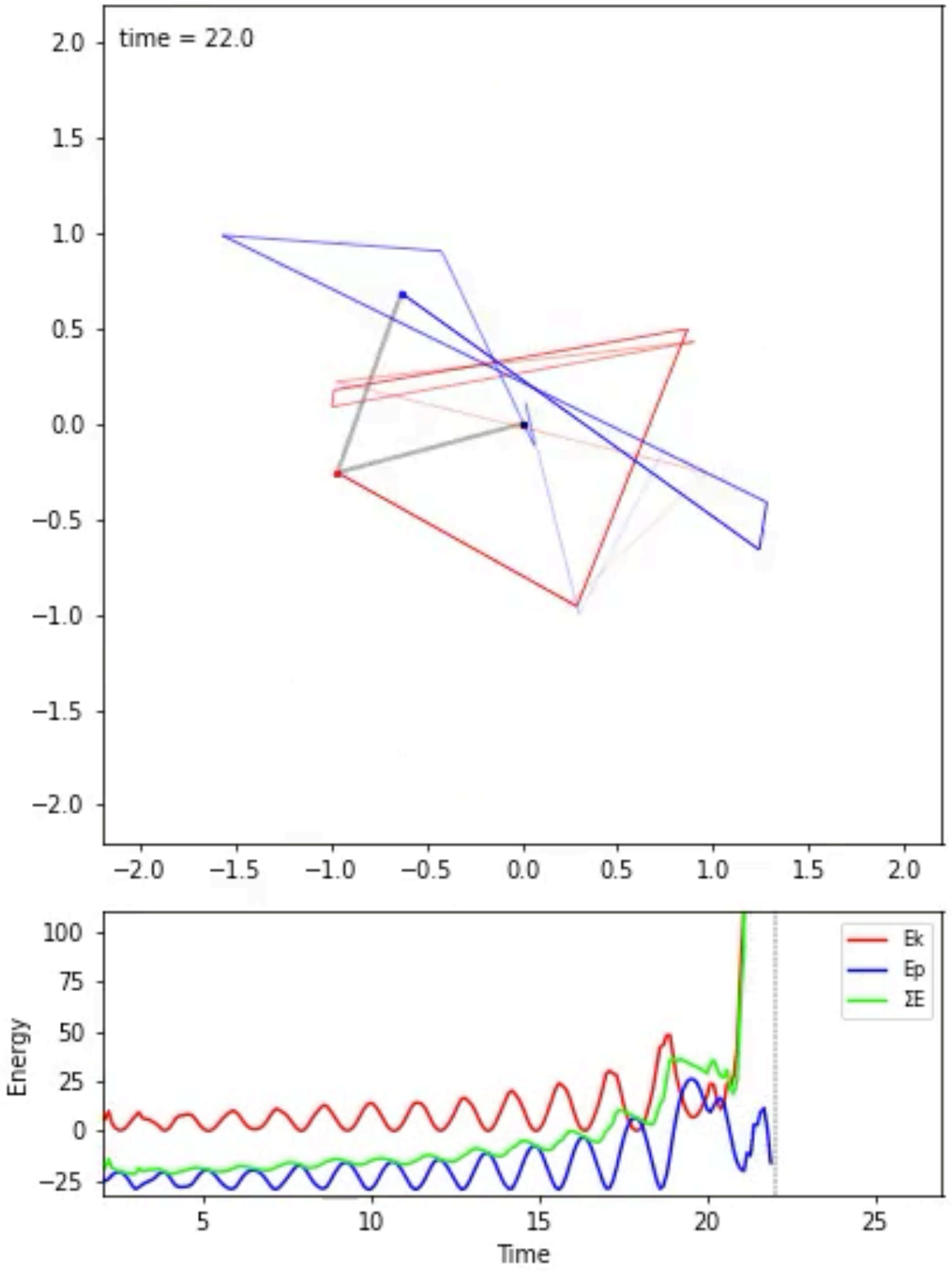
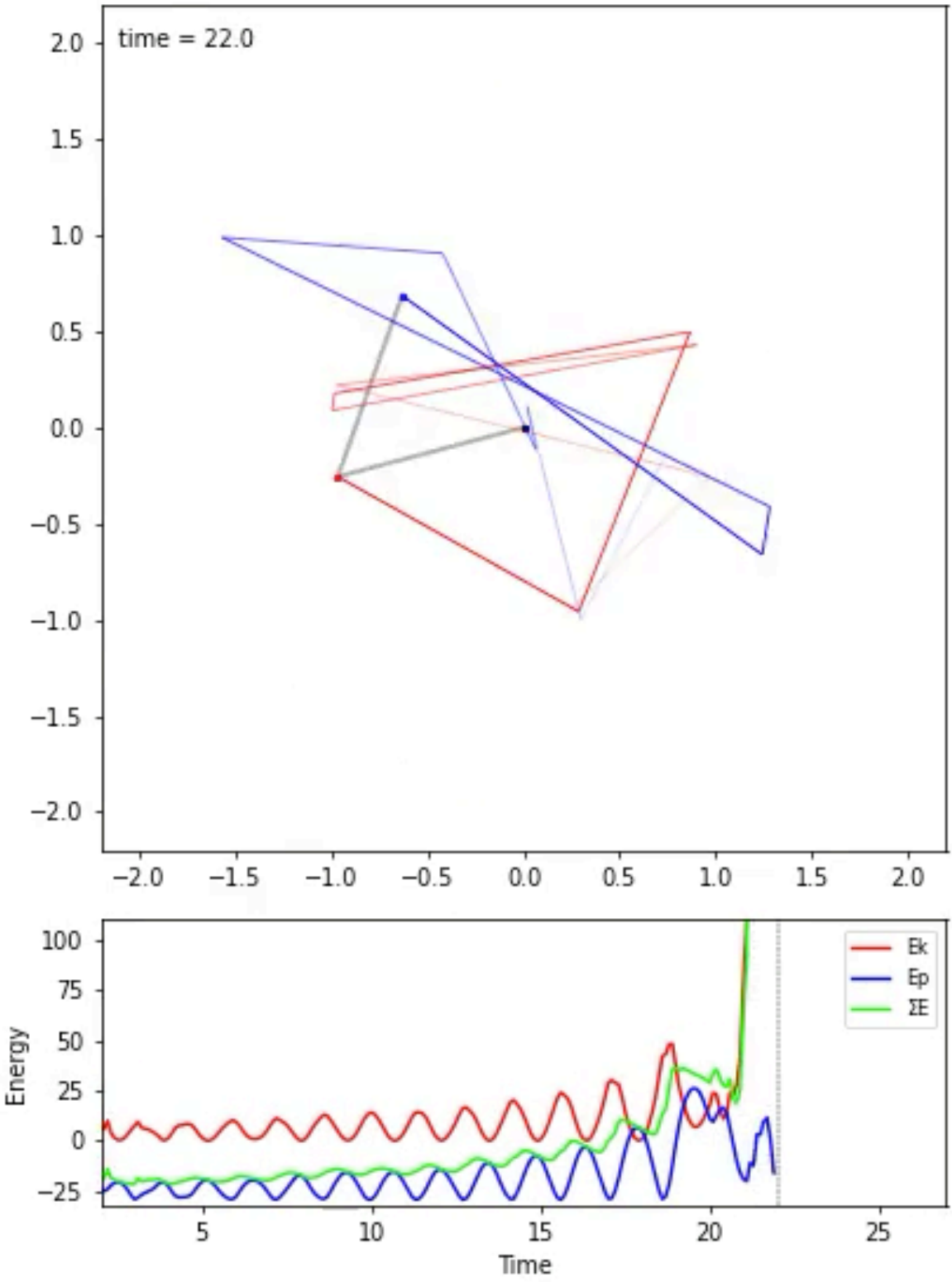
Introduction

Energy Constrain in Dynamic Core

Result of simulation

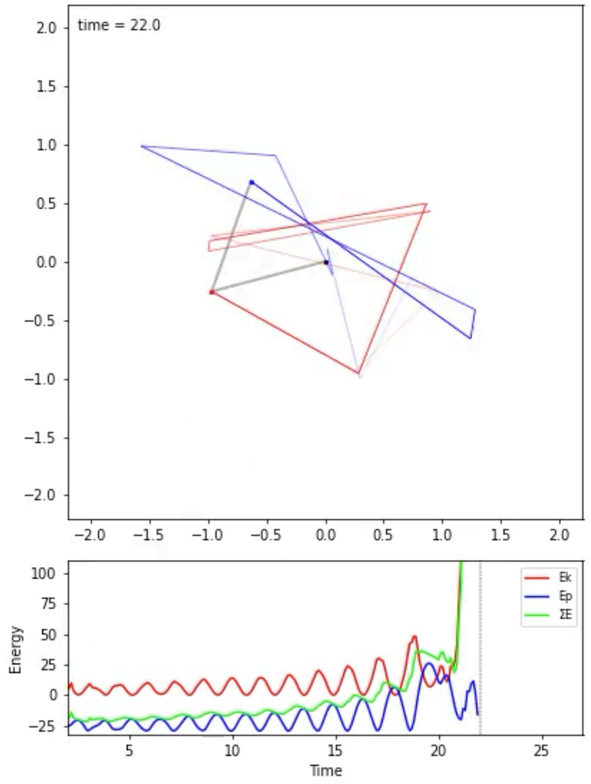

time = 22.0
2.0
1.5
1.0
0.5
0.0
−0.5
−1.0
−1.5
−2.0
−2.0
−1.5
−1.0
−0.5
0.0
0.5
1.0
1.5
2.0
Ek
Ep
ΣE
Energy
100
75
50
25
0
−25
5
10
15
20
25
Time


time = 22.0
2.0
1.5
1.0
0.5
0.0
−0.5
−1.0
−1.5
−2.0
−2.0
−1.5
−1.0
−0.5
0.0
0.5
1.0
1.5
2.0
Ek
Ep
ΣE
Energy
100
75
50
25
0
−25
5
10
15
20
25
Time

Introduction

Energy Constrain in Dynamic Core

Result of simulation



Introduction

Energy Constrain in Dynamic Core

Adding energy constrain, it will adjust kinetic energy while mechanical energy is not conserved.

```
def __kinetic_energy_adjustment(self) -> None:
    """
    Adjust the kinetic energy of the double pendulum system to match the
theoretical total energy.

    Returns:
        None
    """
    # Pseudo-Code
    1. Get current kinetic energy and potential energy
    2. Calculate theoretical energy
    3. Calculate current mechanical energy
    4. Calculate energy error
    5. In(De)crease kinetic energy to make energy match theoretical energy
```