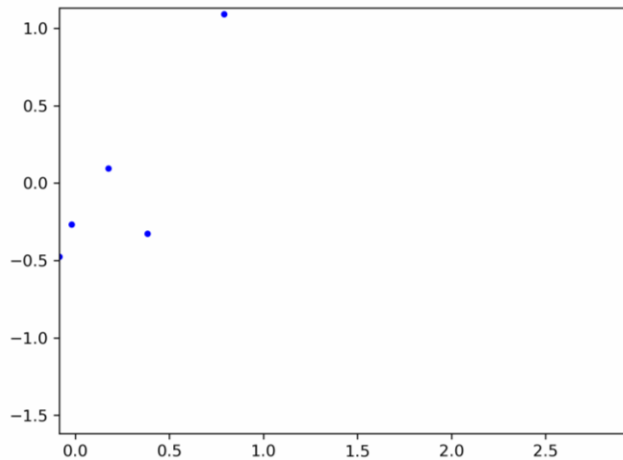


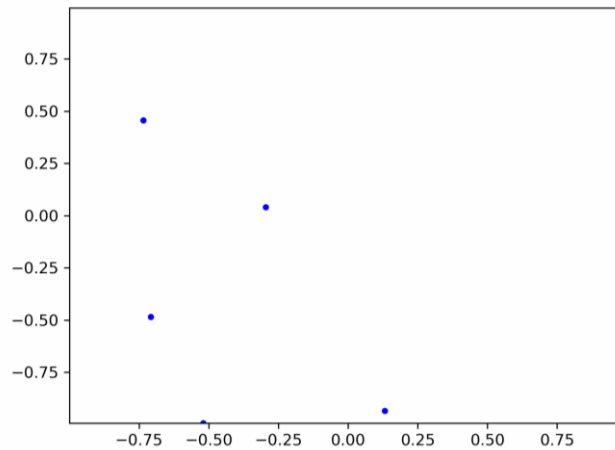
# Learning System Dynamics without Forgetting (MS-GODE)

## Task: Trajectory Prediction over Multiple Systems with Different Dynamics

- A system contains multiple objects.
- Certain types of **interactions** exist among the objects, which determines the **dynamics** with environmental factors.
- A machine learning model is expected to **predict the future trajectories based on** the given observation of **previous trajectories**.

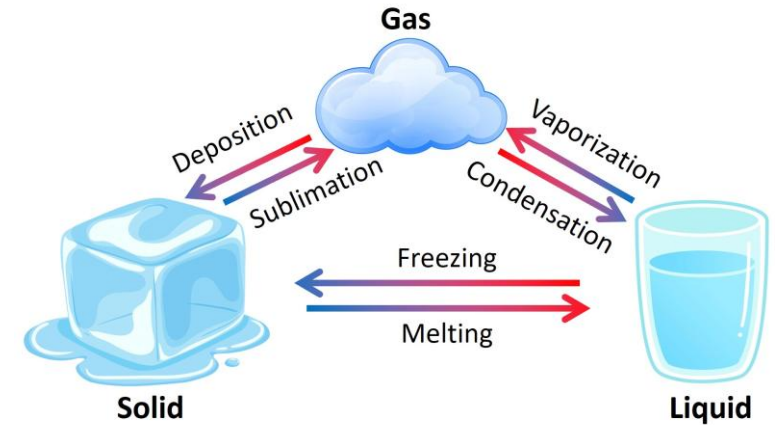


Spring connected particles



Charged particles

## Challenge: System Dynamics are Varying

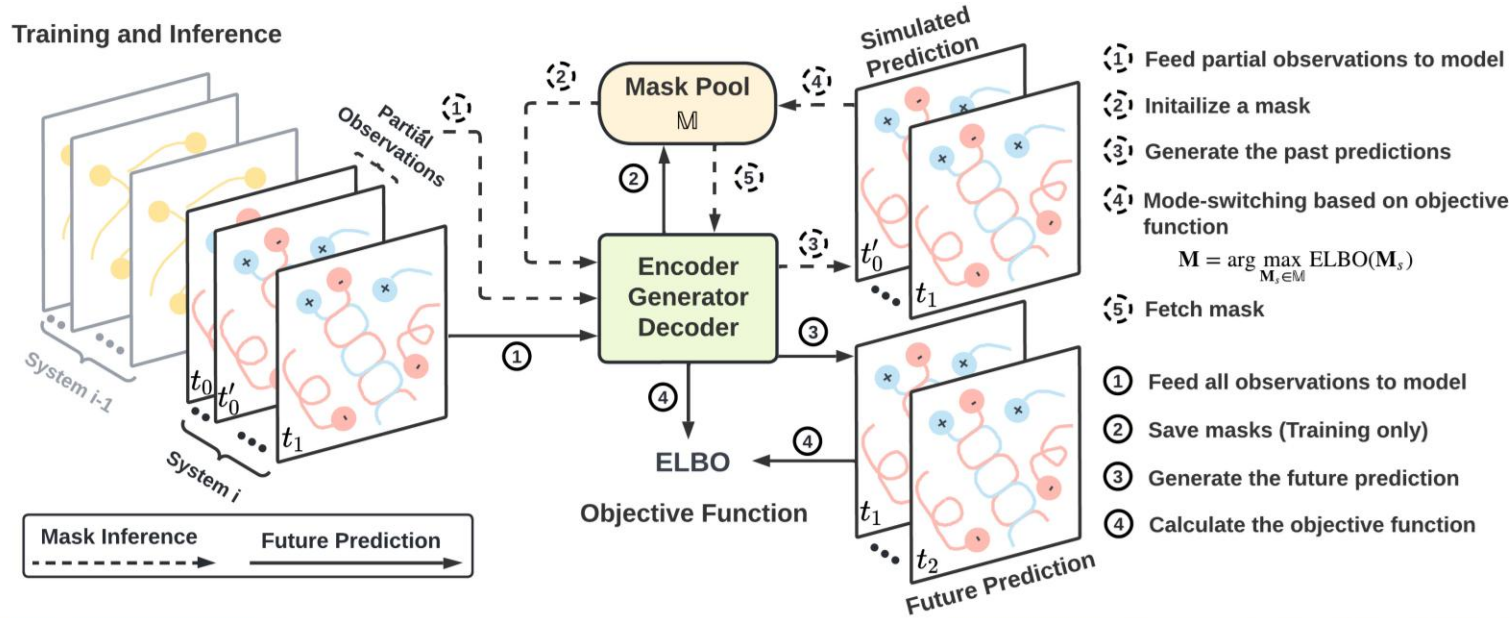


- Dynamics of the same system is subject to change (e.g. due to environmental factor changes).
- Model may need to learn over multiple systems with diverse dynamics.
- These lead to **catastrophic forgetting** issue.

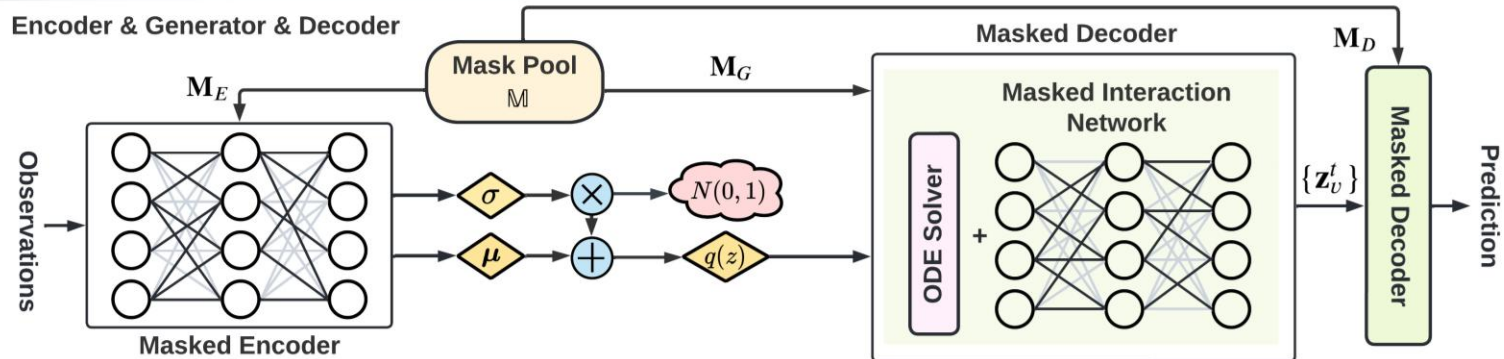
# Learning System Dynamics without Forgetting (MS-GODE)

## Pipeline of MS-GODE

### Training and Inference



### Encoder & Generator & Decoder



## Evaluation Scenarios: Physical & Biological Systems

