



Figure 1: Architecture of one ENGNN layer. We use blue for equivariant features and yellow for invariance features. The layer first takes a pair of equivariant and invariant feature as input, using equivariant feature to update invariant ones, then passing the invariant features to an ordinary message passing layer to produce invariant output. The invariant output is further used to update equivariant feature to produce equivariant output. The output will be used as the input of next layer. Initial equivariant feature is noise, invariant feature is node feature.