

## A Literal based Bipartite Graph Initial Embeddings

The embeddings used in this representation are a modified version of those proposed by [18, 19], where certain literal-based metrics replace some of the variable-based metrics. Table 5 shows the details of the embeddings used as the initial representation for each node.

**Table 5.** Literal, Constraint, and Edge Embeddings for the literal-based bipartite graph representation.

Name	Meaning
<b>Literal Embeddings</b>	
obj	Normalized coefficient of the literal in the objective function.
l_coeff	Mean coefficient of the literal over all constraints in which it occurs.
Nl_coeff	Number of constraints in which the literal appears.
max_coeff	Maximum coefficient value among all constraints for the literal.
min_coeff	Minimum coefficient value among all constraints for the literal.
Nv_coeff	Number of constraints in which the corresponding variable occurs.
<b>Constraint Embeddings</b>	
c_coeff	Average of all coefficients in the constraint.
Nc_coeff	Degree of the constraint node in the bipartite representation.
rhs	Right-hand-side value of the constraint.
sense	The sense of the constraint (0 if =, 1 if $\geq$ , -1 if $\leq$ ).
<b>Edge Embeddings</b>	
coeff	Coefficient of the literal in the constraint