If you have no idea about matrix equation problems and linear programming, this may be a temporary reference.

$$\boldsymbol{M} \bullet \vec{v} = 0$$

This is a simplified way of solving, full version please consult textbooks of linear algebra.

1. Move the reactions column to the end of the matrix whose flux can be certified by column transformation, and so do the $\vec{v}$.
2. Do the raw transformation, transform the matrix into the simplest form of a matrix for row.
3. Then you may find out the nonzero initial, then find out the relationship between the flux of reaction in their columns. (in the same time, you can find out the rank of the matrix)
4. Enter the then enter the flux you have known (or assumes) to get others.

Linear programming:

Also, this is just a simplified version and there are many mature and advanced programs to refer.

1. Choose **i** non-linear flux as basis, **i** equals to the degree of freedom of equations (n-rank(M)), then adjust them into the end of M by column transformation
2. Determine the linear relationship equations of other flux with basis by line transformation
3. Find the intersection of all the constraint equations in the vector space and verify one by one whether these intersections satisfy all the constraints, and delete those that do not.
4. We know that the extreme value of the linear programming must be taken at the intersection point, so the coordinates of all the intersection points satisfying the constraints are brought into the coordinates of the parameters to be optimized and their maximum values are found.