Shifting

$$(K - \lambda M)\, \underline{u} = \underline{0}$$

Consider a problem where the eigensolver doesn't work if K^{-1} does not exist (subspace iteration). The eigenvalues can be shifted, obtained, and shifted back

Consider $\lambda_i = \mu_i - 1$. If any λ is 0, then any $\mu_i = 1$.

$$(K - (\mu - 1) M)\, \underline{u} = \underline{0}$$

$$([K + M] - \mu M)\, \underline{u} = \underline{0}$$

$$(K' - \mu M)\, \underline{u} = \underline{0}$$

K^{-1} now exists. Once μ_i are found, $\lambda_i = \mu_i - 1$ can be applied.