

$$r_0 = b - Ax_0$$

$$p_0 = M^{-1}r_0$$

$$z = p_0$$

for $m = 0, 1, \dots$

$$\alpha_m = \frac{r_m^T z_m}{p_m^T (Ap_m)}$$

$$x_{m+1} = x_m + \alpha_m p_m$$

$$r_{m+1} = r_m - \alpha_m (Ap_m)$$

$$z_{m+1} = M^{-1}r_{m+1}$$

$$\beta_m = \frac{r_{m+1}^T z_{m+1}}{r_m^T z_m}$$

$$p_{m+1} = z_{m+1} + \beta_m p_m$$

end

* There's no longer the need to precompute the Cholesky factorisation of M

* The PC is only applied ("inverted") once per iteration

* Again, we want M easily "invertible"

usually: solve $Mz_{m+1} = r_{m+1}$