

```

conjGrad[[Elt extends Number, nat N,
          Mat extends Matrix[[Elt, N×N]],
          Vec extends Vector[[Elt, N]]
          ]](A:Mat, x:Vec):(Vec, Elt)
  cgitmax = 25
  z:Vec = 0
  r:Vec = x
  p:Vec = r
  ρ:El = rT r
  for j ← seq(1:cgitmax) do
    q = Ap
    α =  $\frac{\rho}{p^T q}$ 
    z := z + αp
    r := r - αq
    ρ0 = ρ
    ρ := rT r
    β =  $\frac{\rho}{\rho_0}$ 
    p := r + βp
  end
  (z, ||x - Az||)

```