In [4]:

```
using LinearAlgebra, Random, MatrixDepot
# LinearAlgebra for: eig, norm, etc,
# Random for getting random numbers,
# MatrixDepot for generating "wathen" matrices

include("arnoldi.jl")

nn=1000;
Random.seed!(0)
A=matrixdepot("wathen",nn,nn)

m=100;
b = randn(size(A)[1], 1)

function my_hw1_gs(Q,w,k)
    CGS(Q, w, k);
    #MGS(Q, w, k);
    #DGS(Q, w, k);
    #TGS(Q, w, k);
end

Q,H=arnoldi(A,b,m);
should_be_zero1=norm(Q*H-A*Q[:,1:m])
should_be_zero2=norm(Q'*Q-I)

println("Time:")
@time Q,H=arnoldi(A,b,m)

println("Should be zero 1: ", should_be_zero1)
println("Should be zero 2: ", should_be_zero2)
```

```
Time:
135.918547 seconds (3.01 k allocations: 126.501 GiB, 25.54% gc time)
Should be zero 1: 2.1585647779303646e-13
Should be zero 2: 3.268348090335132e-11
```