```
#Instructions to run COMET/CRATER Pipeline
```

```
#push!(LOAD_PATH,"*Your path to source code*")
```

```
["@", "@v#.#", "@stdlib", "C:\\Users\\Jake\\Downloads\\Discovering-Multipoles-master\\Dis
```

```
push!(LOAD_PATH,"C:\\Users\\Jake\\Downloads\\Discovering-Multipoles-master\\Discovering-Multipoles-master\\new")
```

```
#TODO import modules for each variant
```

```
using MasterRunner
#   module with Pipeline
```

```
# Import your data and calculate its covariance matrix
# To use importer(), change path in importCSV.jl
```

```
c = 171×171 Array{Float64,2}:
 0.999999    -0.0275592   -0.0233068   …  -0.187976   -0.0930294  -0.0773825
-0.0275592    1.0         -0.0174192      -0.0525226  -0.247836   -0.11897
-0.0233068   -0.0174192    0.999998        0.50553     0.230775    0.36177
-0.316333    -0.166339    -0.286075       -0.244824   -0.150774    0.0926895
 0.057218    -0.0959581    0.39749         0.325004    0.0903241   0.360898
-0.0473339   -0.0741073    0.660582    …   0.745638    0.244707    0.765864
-0.0713681    0.522173    -0.340414       -0.182192   -0.118301   -0.162687
 ⋮                                    ⋱                           ⋮
-0.112227     0.0551468   -0.166646    …  -0.235063   -0.0732861  -0.232412
-0.496943     0.0335916   -0.00327818      0.111269   -0.0123534  -0.00970838
-0.00247378  -0.00111927   0.77914         0.751671    0.296283    0.433755
-0.187976    -0.0525226    0.50553         1.00001     0.350896    0.449635
-0.0930294   -0.247836     0.230775        0.350896    0.999991    0.0354314
-0.0773825   -0.11897      0.36177     …   0.449635    0.0354314   0.999999
```

```
c = importer()
```

```
#run Pipeline with Pipeline(covariance matrix, gain threshold delta, dependance threshold sigma, pairwise correlation limit {use 1.0 for no affect on Pipeline})

#Pipeline returns a DataFrame with [COMET/CRATER version, run time, number of multipoles]
```

```
1.0
```

```
begin
    d = 0.2
    s = 0.5
    p = 1.0
end
```

```
df = Pipeline(c,d,s,p)
```

```
#run Pipeline_Mults with Pipeline_Mults(covariance matrix, gain threshold delta, dependance threshold sigma, pairwise correlation limit {use 1.0 for no affect on Pipeline})

#Pipeline_Mults returns:
#DataFrame with [COMET/CRATER version, run time, number of multipoles],
#Multipoles from plain COMET,
#Multipoles from COMET using Candidate Filtering,
#Multipoles from plain CRATER,
#Multipoles from CRATER using Candidate Filtering,
#Multipoles from CRATER using Pruning in Candidate Generation phase,
#Multipoles from CRATER using CF and PCG
```

```
df_2, M_Co, M_CoCF, M_Cr, M_CrCF, M_CrPCG, M_CrCFPCG = Pipeline_Mults(c,d,s,p)
```