

- *#Instructions to run a specific COMET/CRATER version*

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

- *#push!(LOAD_PATH, "*Your path to source code*")*
- *push!(LOAD_PATH, "C:\\Users\\Jake\\Downloads\\Discovering-Multipoles-master\\Discovering-Multipoles-master\\new")*

- **using Multipoles**
- *# module with COMET/CRATER variants*

- *# Function list in Multipoles module:*
- *#*
- *# importData(path)*
- *#Takes user path to CSV file, returns covariance matrix of data*
- *#*
- *# COMET_None(c::Array{F,2}, d::F, s::F, pair_lim::F) where {F<:AbstractFloat}*
- *#Takes covariance matrix c, gain threshold d, dependence threshold s, pairwise correlation limit pair_lim*
- *#Returns multipoles of plain COMET*
- *#*
- *# COMET_CF(c::Array{F,2}, d::F, s::F, pair_lim::F) where {F<:AbstractFloat}*
- *#Takes covariance matrix c, gain threshold d, dependence threshold s, pairwise correlation limit pair_lim*
- *#Returns multipoles of COMET using Candidate Filtering*
- *#*
- *# CRATER_None(c::Array{F,2}, d::F, s::F, pair_lim::F) where {F<:AbstractFloat}*
- *#Takes covariance matrix c, gain threshold d, dependence threshold s, pairwise correlation limit pair_lim*
- *#Returns multipoles of plain CRATER*
- *#*
- *# CRATER_CF(c::Array{F,2}, d::F, s::F, pair_lim::F) where {F<:AbstractFloat}*
- *#Takes covariance matrix c, gain threshold d, dependence threshold s, pairwise correlation limit pair_lim*
- *#Returns multipoles of CRATER using Candidate Filtering*
- *#*
- *# CRATER_PCG(c::Array{F,2}, d::F, s::F, pair_lim::F) where {F<:AbstractFloat}*
- *#Takes covariance matrix c, gain threshold d, dependence threshold s, pairwise correlation limit pair_lim*
- *#Returns multipoles of CRATER using Pruning in Candidate Generation phase*
- *#*
- *# CRATER_PCG_CF(c::Array{F,2}, d::F, s::F, pair_lim::F) where {F<:AbstractFloat}*
- *#Takes covariance matrix c, gain threshold d, dependence threshold s, pairwise correlation limit pair_lim*
- *#Returns multipoles of CRATER using PCG and CF*

```
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 = importData("C:\\Users\\Jake\\Downloads\\Discovering-Multipoles-master\\Discovering-Multipoles-master\\New\\multipolesCSV.csv")`

```
multipoles =
```

```
[poles_t(0.633647, 0.225401, [171, 10, 25]), poles_t(0.628469, 0.232417, [171, 25, 152]),
```

- `multipoles = CRATER_PCG_CF(c,0.2,0.5,1.0)`