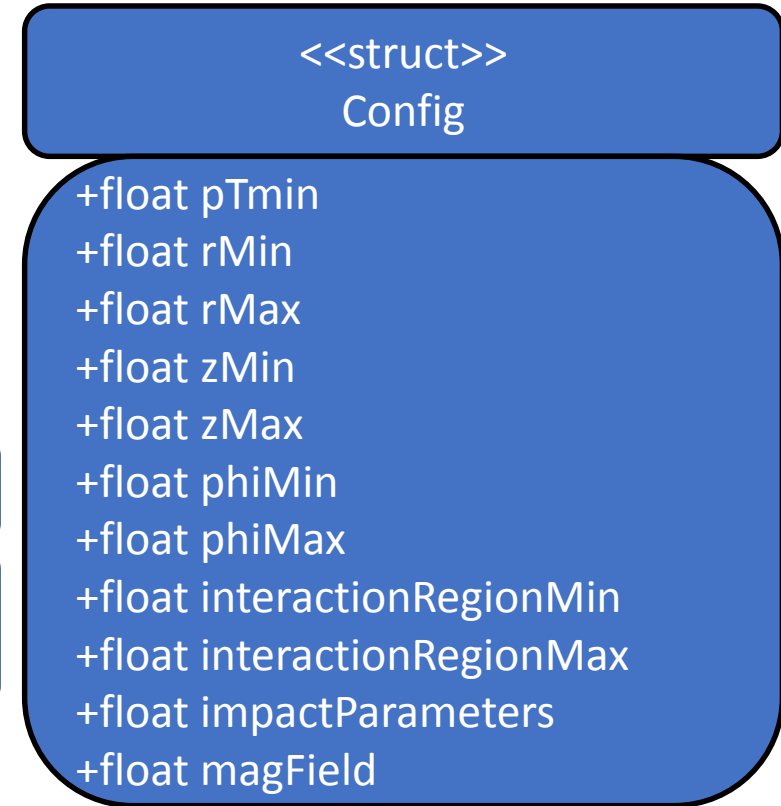
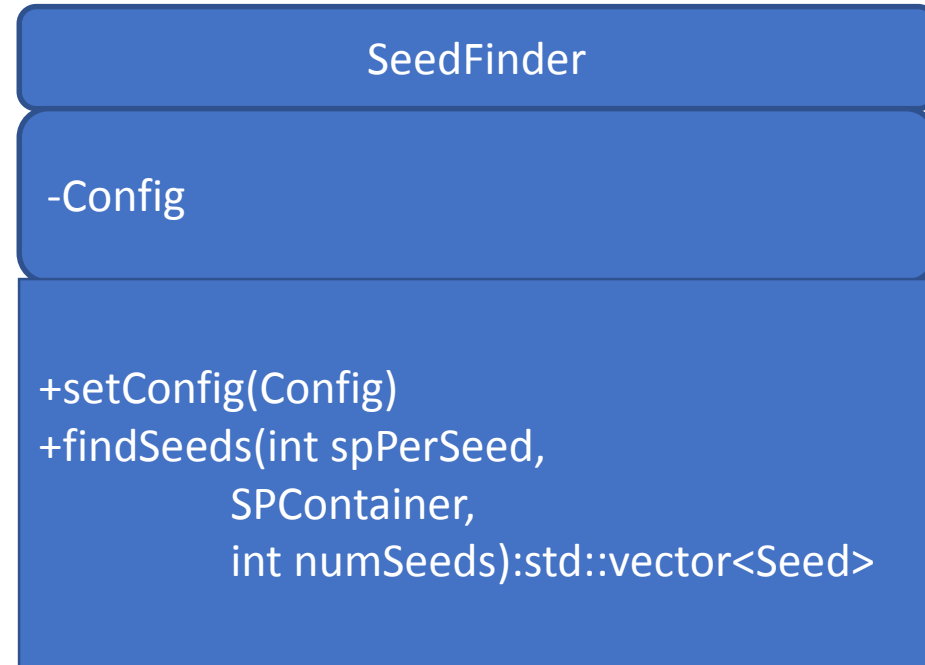


Seeding Design Proposal



SpacePoint

```
+x():float  
+y():float  
+z():float  
+phi():float  
+r():float  
+z():float
```

SPContainer

```
+getBin(Vector3D)  
+rangeRPhiZ(float, float, float,  
            float, float, float)  
:pair<It,It>
```

<<struct>>
Config

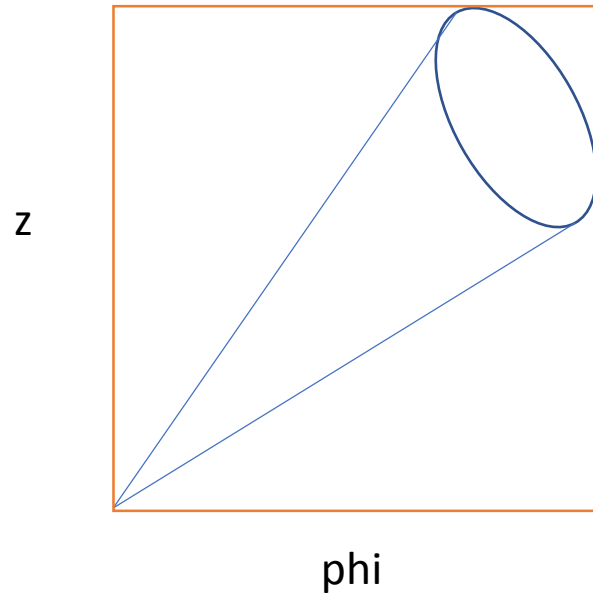
```
+float pTmin  
+float rMin  
+float rMax  
+float zMin  
+float zMax  
+float phiMin  
+float phiMax  
+float interactionRegionMin  
+float interactionRegionMax  
+float impactParameters  
+float magField
```

SeedFinder

-Config

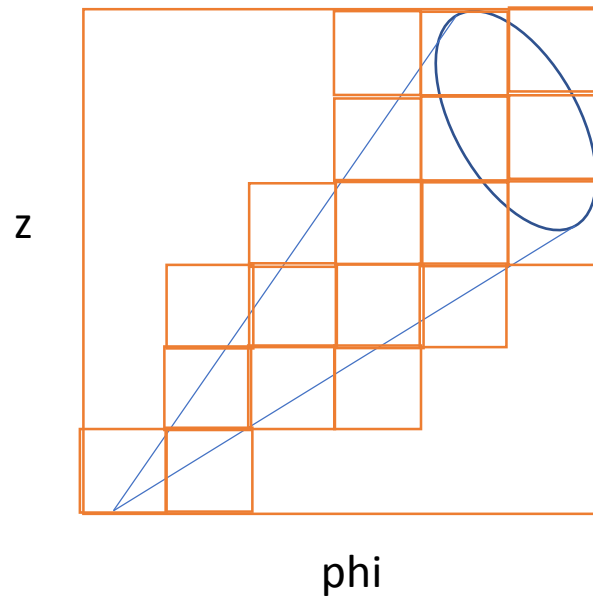
```
+setConfig(Config)  
+findSeeds(int spPerSeed,  
           SPContainer,  
           int numSeeds):std::vector<Seed>
```

Cone vs Range



- A Range in R, Phi and Z covers areas that are out of question for a Seed
- A Cone shaped area contains only the required seeds

Cone vs Range



- A Range in R, Phi and Z covers areas that are out of question for a Seed
- A Cone shaped area contains only the required seeds
- Loop only over bins covering cone

SpacePoint

+x():float
+y():float
+z():float
+phi():float
+r():float
+z():float

SPContainer

+getBin(Vector3D)
+rangeRPhiZ(float, float, float,
float, float, float)
:pair<It,It>
**+rangeCone(Vector3D, Vector3D,
float, float):pair<It,It>**

SeedFinder

-Config

+setConfig(Config)
+findSeeds(int spPerSeed,
std::array<SPContainer>,
std::vector<int> SPCindices,
int numSeeds):std::vector<Seed>

<<struct>>
Config

+float pTmin
+float rMin
+float rMax
+float zMin
+float zMax
+float phiMin
+float phiMax
+float interactionRegionMin
+float interactionRegionMax
+float impactParameters
+float magField

SpacePoint

+x():float
+y():float
+z():float
+phi():float
+r():float
+z():float

SPContainer

+getBin(Vector3D)
+rangeRPhiZ(float, float, float,
float, float, float)
:pair<It,It>
+rangeCone(Vector3D, Vector3D,
float, float):pair<It,It>

SeedFinder

-Config

+setConfig(Config)
+findSeeds(int spPerSeed,
std::array<SPContainer>,
std::vector<int> SPCindices,
int numSeeds,
Functor& seedFilter)
:std::vector<Seed>

<<struct>>
Config

+float pTmin
+float rMin
+float rMax
+float zMin
+float zMax
+float phiMin
+float phiMax
+float interactionRegionMin
+float interactionRegionMax
+float impactParameters
+float magField

Current implementation state

- The SP and the simple SP Container 😊
 - 3D array, as opposed to ATLAS design where container is a 1D array “hand tailored” into a 2D array in phi and z, with SP sorted by R in each bin
- Next step: straight line seeds iterating over phi-z slices