Initial Gaia Source List

A snapshot of the best astrometric information on all celestial objects before Gaia launches.

Nominally to a magnitude limit of G=20 – however
CTE requires a fainter limit of r=24.

Photometry in two or more all-sky bandpasses and a rudimentary classification.

Initial Gaia Source List IGSL 10/2006

- Act as a base for the matching of GAIA observations
- Provide an early base from which to recognize science alerts such as SNs, Solar System objects, novae and other large variables, etc
- Allow a pre-matching of the numerous auxiliary catalogs (reference catalogs from all CUs) to the provisional GAIA object names;
- This pre-matching will clean and homogenize the auxiliary data and allow us to minimize and investigate mismatches before launch
- Simplify the software development and act as a sanity check during the mission especially First Look;
- Provide cross reference material for GAIA uses such as multi band magnitudes and data mining;
- Allow transit predictions for the purpose of charge-transfer history tracking, especially early in the mission when the Gaia
- A subset of the IGSL will form the Attitude Star Catalog

IGSL Progress + Future

- 2007 IGSL 1.0 produced (Tycho/UCAC/SDSS/QSO/GSC)
- 12/2007 Delivered to ESTEC
- 2008 IGSL – cross match tool produced

- 11/2008 Xmatch and IGSL 1.0 Assessment
- 05/2009 Attitude Star Catalog 1.0 to ESTEC
- 11/2009 IGSL 2.0 to ESTEC
- 05/2010 Definitive IGSL + ASC subset

Initial Gaia Source List 10/2008

- Act as a base for the matching of GAIA observations ! MAYBE NAMING !
- Provide an early base from which to recognize science alerts such as SNs, Solar System objects, novae and other large variables, etc
- Allow a pre-matching of the numerous auxiliary catalogs (reference catalogs from all CUs) to the provisional GAIA object names;
- This pre-matching will clean and homogenize the auxiliary data and allow us to minimize and investigate mismatches before launch
- Simplify the software development and act as a sanity check during the mission especially First Look;
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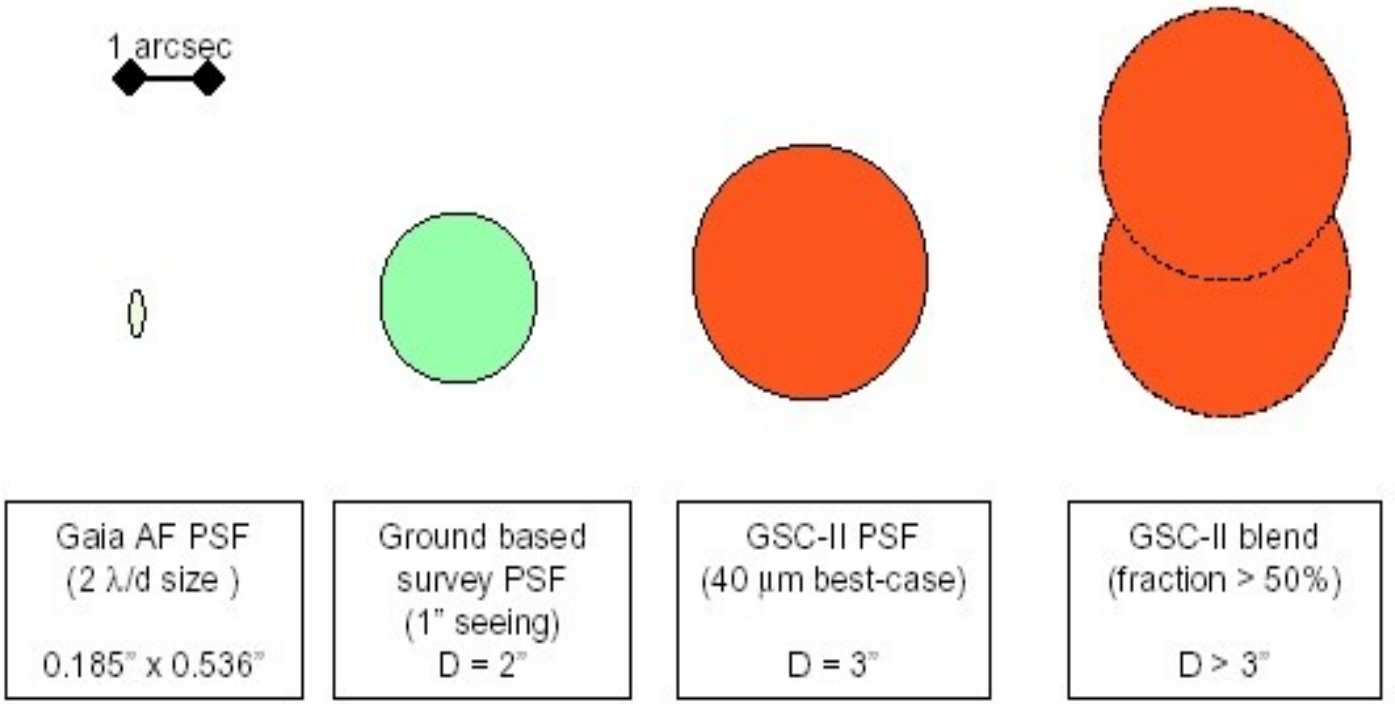
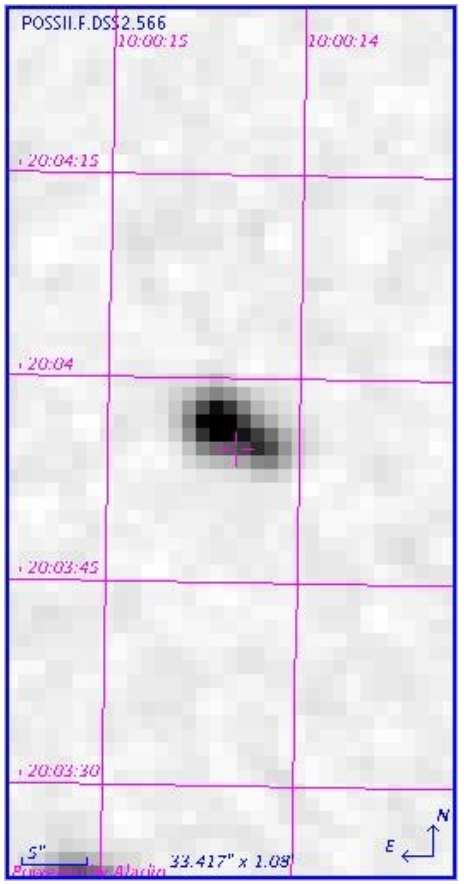
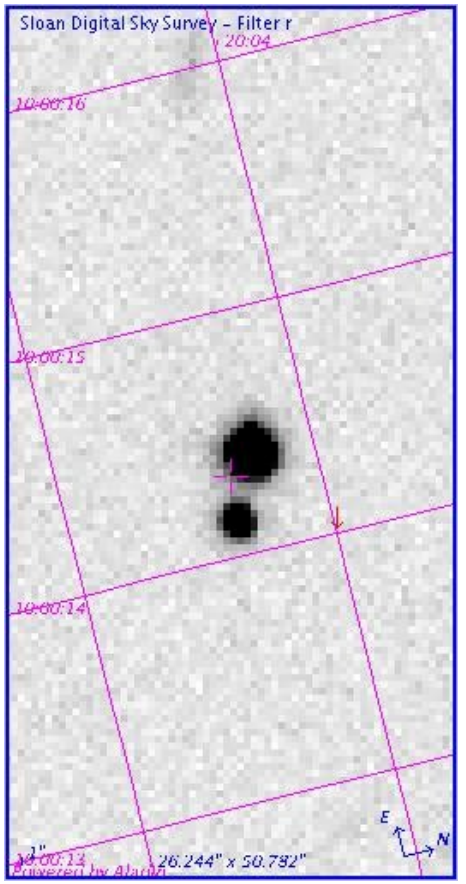
- Allow transit predictions for the purpose of charge-transfer history tracking, especially early in the mission when the Gaia
- A subset of the IGSL will form the Attitude Star Catalog -> IDT

Matching – The devil's in the details

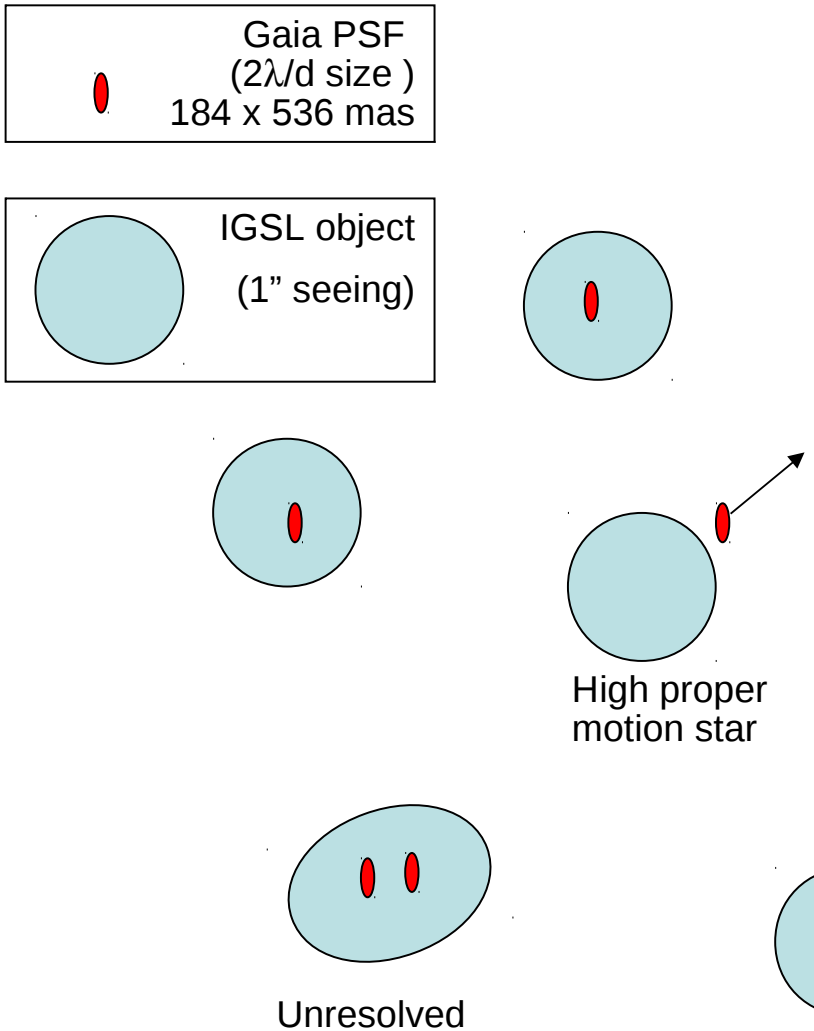


GSC23 vs SDSS



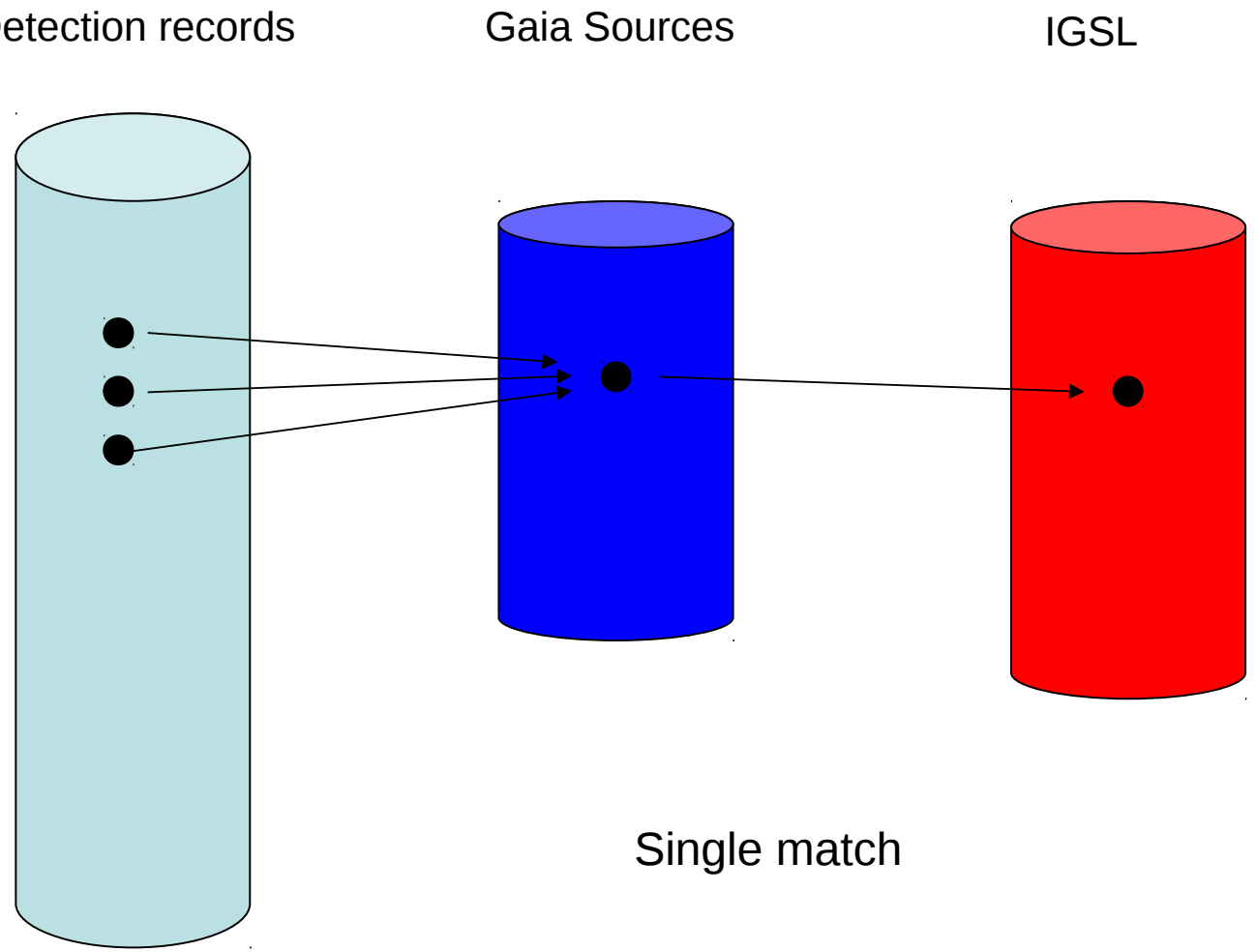


IGSL vs Gaia Obs



Catalogs with very different properties in terms of :

- **Resolution**
- **Observation Epoch** (proper motions, variability)
- **Passbands**

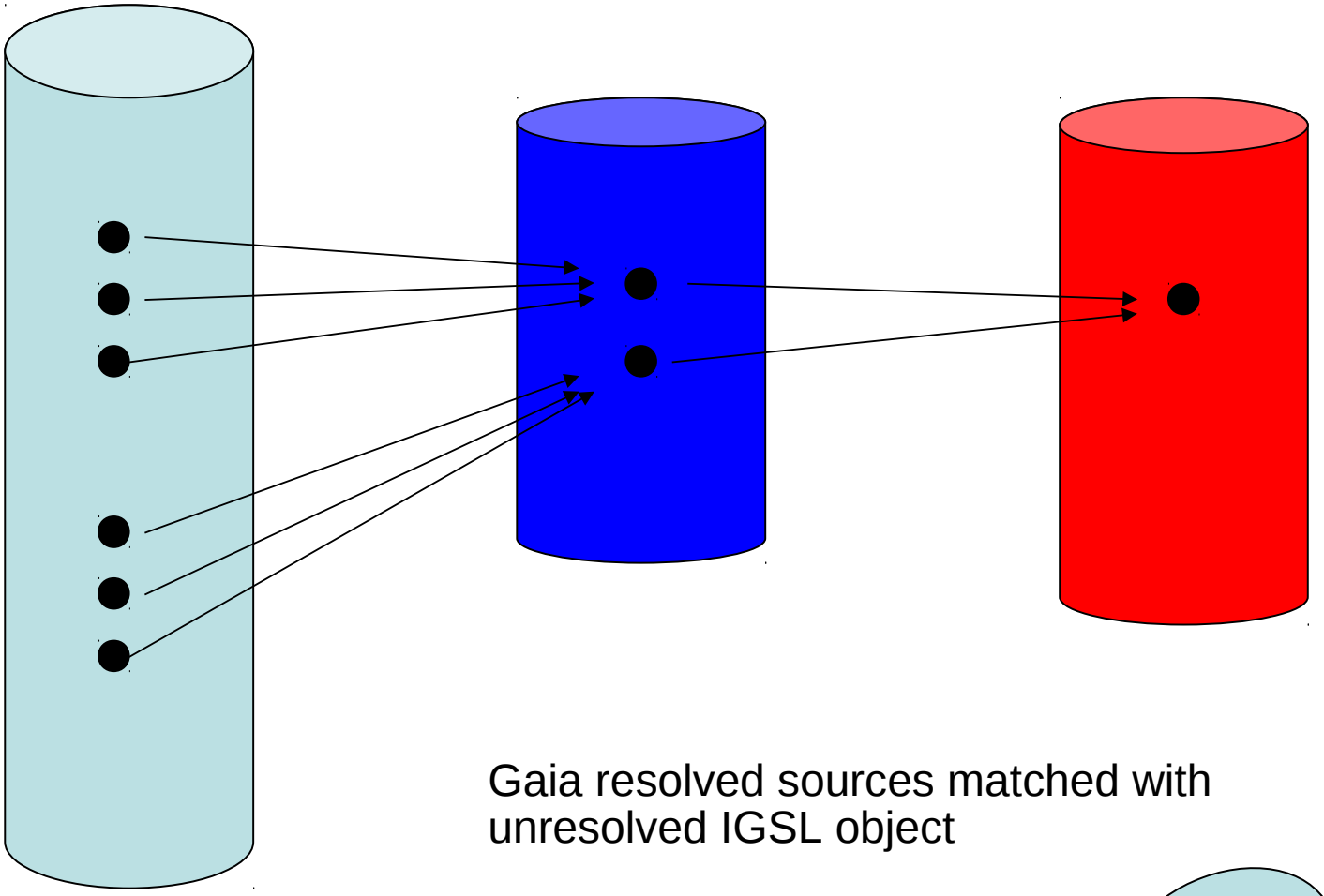


Single match

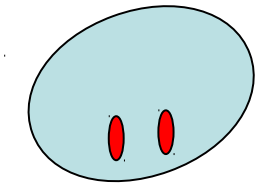
Detection records

Gaia Sources

IGSL



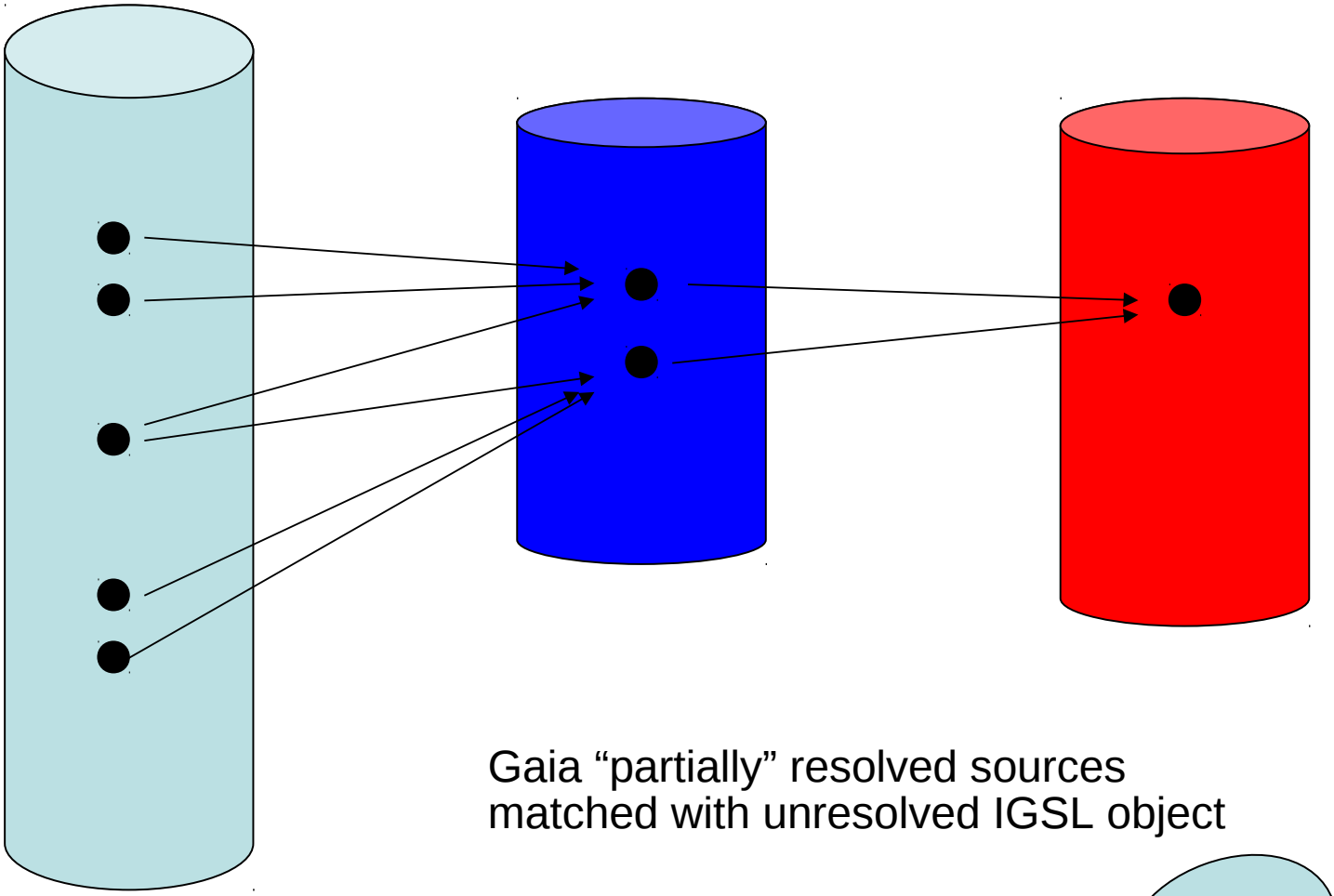
Gaia resolved sources matched with unresolved IGSL object



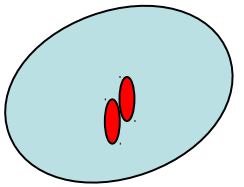
Detection records

Gaia Sources

IGSL



Gaia “partially” resolved sources
matched with unresolved IGSL object



Matching – The devil's in the details

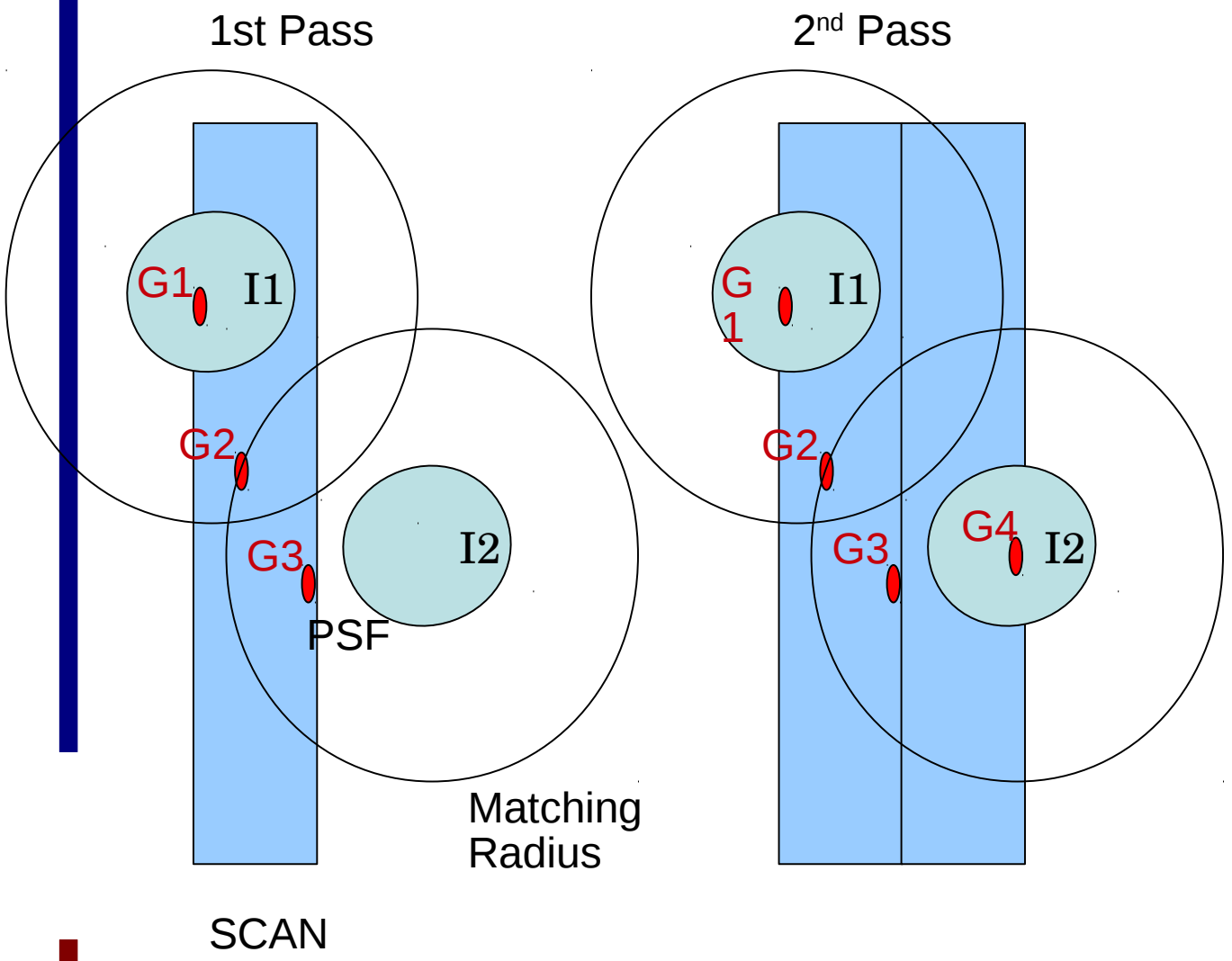
Matching at CU level

- Distribution of efficient matching routines
- Widespread CPU repetition
- Data only with MBD release

Adopting IGSL names

- Extra-confusion due to mis-identifications
- Possible bias of results as parents now 1-3”
- Renaming large -> lookup table large

Matching – The devil's in the details



GAIA NAMING
1st pass G1, G2, G3
=> I1 = G1, I2=G3
2nd pass add G4
=> I1 = G1, I2=G4

IGSL NAMING =>
1st pass
I1 becomes G2/G2/2?
I2 becomes G3/G2/1?
2nd pass
I1 becomes G2/G2/2?
I2 becomes G2/G3/G4/1?

GAIA Naming
2*10^9 names + IGSL link

IGSL Naming
10^9 ~50% blended
> 3*10^9 names

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- 05/2009 Attitude Star Catalog subset to ESTEC
- 11/2009 IGSL 2.0 to ESTEC
- 05/2010 Definitive IGSL 3.0 + ASC subset