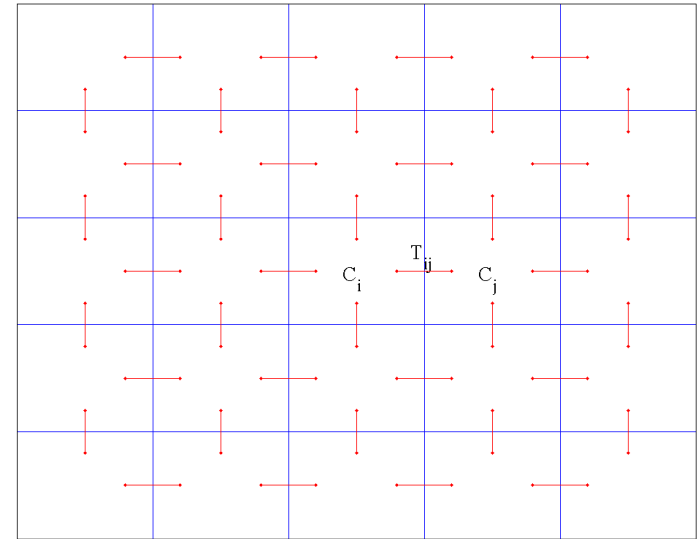


# Global Calibration

# Direct Calibration

- Make absolute calibration for each tile
- Use existing data eg 2MASS
  - (colour scatter too large?)
- Nightly standards
- Hard to get better than 0.01 mag calibration on individual photometry

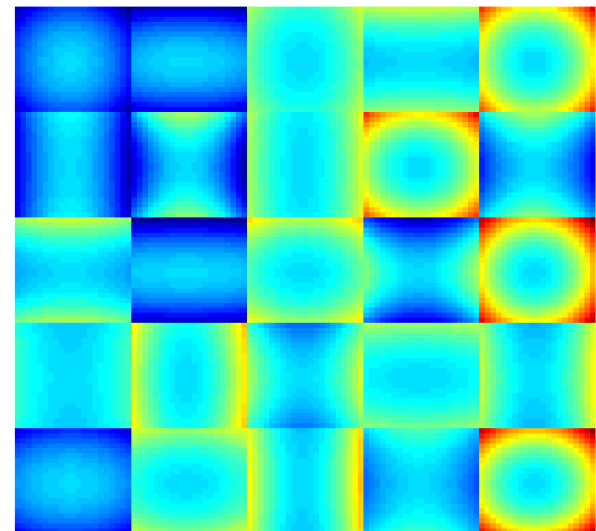
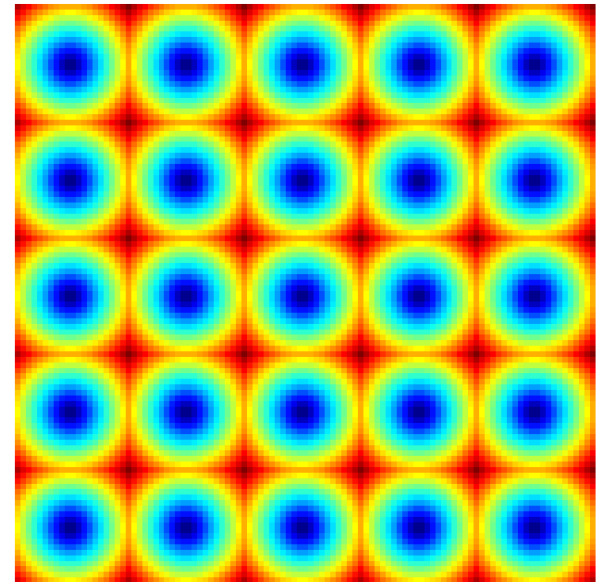
# Methods - Edge matching

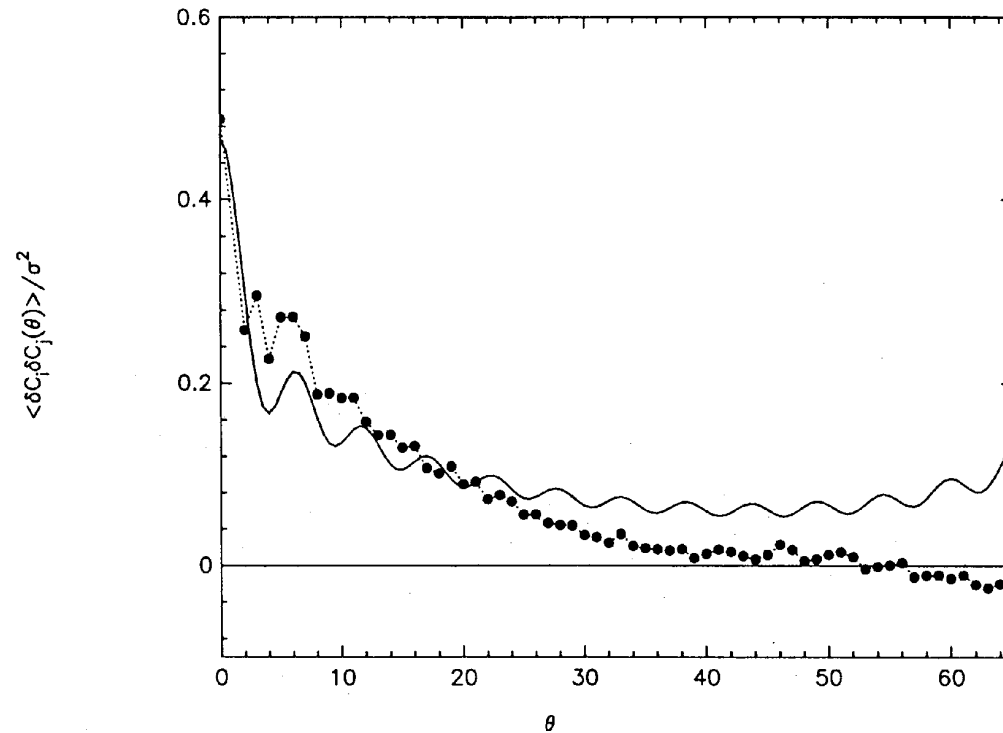


- Given set of overlapping tiles with differing unknown zero-points  $C_i$
- Calculate observed offset for each overlap  $T_{ij}$
- Find the set of tile zero-points that minimize the scatter between the expected offset ( $C_i - C_j$ ) and observed overlap offsets  $T_{ij}$
- Iterative solution (Maddox et al)
- Matrix inversion (Glazebrook et al)

# Edge Matching

- Requires absolutely no flat-field errors
- Radial errors mean that edges don't match the centre
- Generally a mix of modes





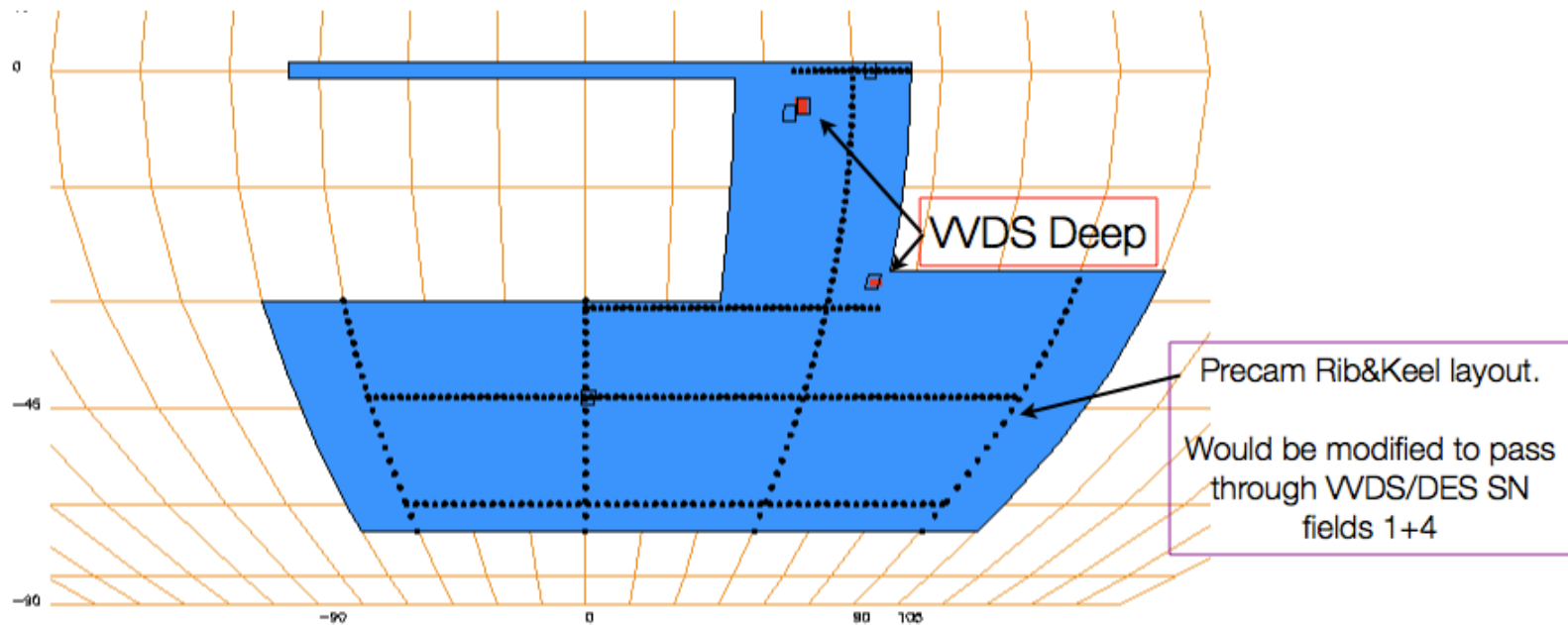
- Gradients propagate across the whole survey
- Random errors also introduce gradients through random walk 10% of each overlap error
- Iterative method can be stopped before convergence – if starting from uniform zero-points this reduces gradients

# External ties

- Use direct calibrations as tie-points in overlap matching
- Reduces gradients
- Gives absolute calibration
- Can vary the weight relative to the overlaps
- Average over different systematics

# External ties

- Observe new calibrations?
- Use a grid like DES?



- Or use a non-connected random coverage?

# Target accuracy

- Aim for map with rms of 0.001 mags
  - wildly optimistic....
- Check flat-fielding
  - in overlaps
  - stacked source counts
- Check global calibration
  - Cross-correlate counts with tile mosaic
- Need 0.01 rms per overlap
- Assuming 0.1 per galaxy need only 100 galaxies