

## Unbinned Poisson model

$I(\Omega|\theta)$ : Intensity

$N(\Omega)$ : Noise

$\Sigma(\Omega, \Omega')$ : Covariance

$\mathcal{E}(\Omega)$ : Exposure

## Fisher Information Matrix

$$\mathcal{I}_{ij}(\theta) = - \left\langle \frac{\ln \mathcal{L}(\mathcal{D}|\theta)}{\partial \theta_i \theta_j} \right\rangle_{\mathcal{D}(\theta)}$$

Additive components

### Effective counts

$$\mathcal{I}_{ij}(\theta) \rightarrow (s_i(\theta), b_i(\theta))$$

### Information Geometry

$$g_{ij}(\theta) = \mathcal{I}_{ij}(\theta)$$

### Information Flux

$$\mathcal{I}(\theta)_{ij} = \int dt \int d\Omega \frac{d\mathcal{E}(\Omega)}{dt} \mathcal{F}(\Omega|\theta)_{ij}$$

Exclusion limits

Discovery reach

Optimal observation strategy

Model likelihood

$$\text{Discrimination power} \\ V = \int d\theta \sqrt{\det g_{ij}(\theta)}$$

Confidence contours  
 $\simeq$  equal geodesic distance contours