

# INTRODUCTION

## Analyzed data products

arroth\_CSD = coordinate system

nh-a-lorri\_mvic-5-geophys-v1.0 / data / shape\_models

nh-a-lorri\_mvic-5-geophys-v1.0 / data / albedo

(All data are in PDS3)

## No thorough check of LBL files

visual inspection: units, data input description, target ...

# BODY FRAME DEFINITION

## PDF Document describing the Arrokoth body-fixed frame

Z-axis along the spin axis (defined by RA,Dec in J2000 frame)

X-axis chosen dynamically

lack of well-identified surface feature to define the zero longitude  
potentially active object

=> principal axis with highest moment of inertia

### Minor Remarks:

- W0 angle of the IAU definition missing in the document  
provided in mission SPK "nh\_stars\_kbo\_centaur\_v003.tpc"
- Two typos

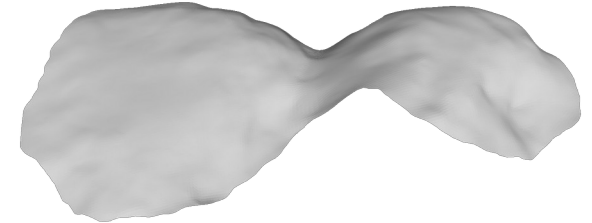
# SHAPE MODELS

## Stereo model

Partial coverage (ASP reconstruction)

mu69\_asp\_ca04\_06\_icp\_smooth

mu69\_asp\_ca04\_06\_icp\_spice\_v01



## Lobes model

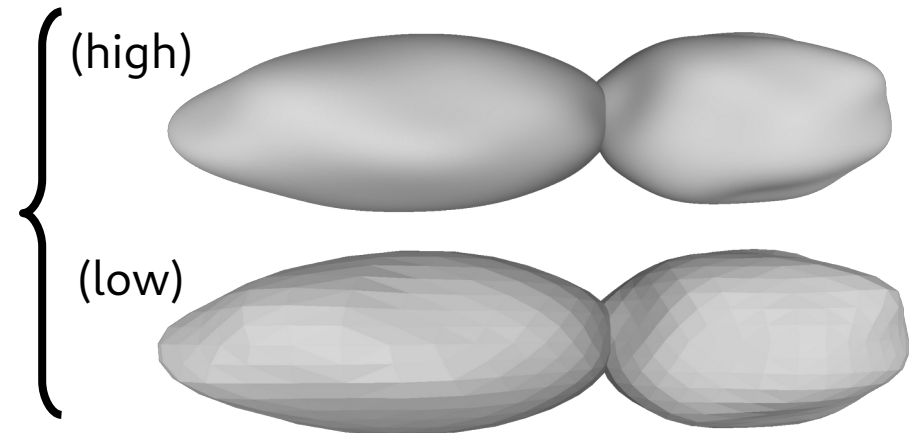
Two lobes (best fit from images)

mu69\_fr2kf\_hipoly

mu69\_fr2kf\_hipoly\_spice

mu69\_fr2kf\_lopoly

mu69\_fr2kf\_lopoly\_spice

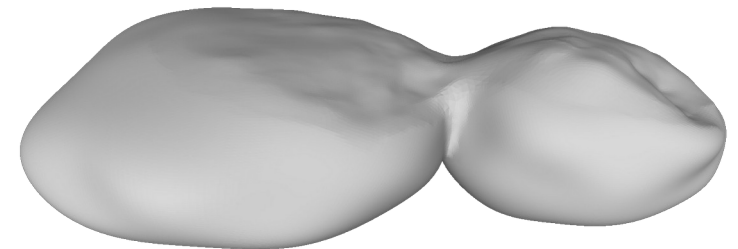


## Merged model

Combination of Lobes + Stereo models

mu69\_merged

mu69\_merged\_spice



# SHAPE MODELS

## Formats:

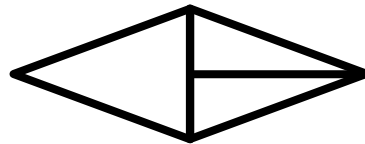
Wavefront OBJ (ASCII) and SPICE/DSK (binary)

## Verification (all models)

Load OBJ file in Paraview and Meshlab

DSK to OBJ conversion with dsxexp (NAIF/SPICE tool)

Check for: duplicate vertices/faces, unreferenced vertices, zero-area faces,  
and T-junctions



## Verification (final merged model)

Alignment of model axes along PAIs

# SHAPE MODELS

## LBL files

Bibliographic references missing for all models but the merged one

Bibliographic references only given in the merged model description

Lobes models: “low/high-polygon shape model” = unclear (to me)

Data format description OK

## OBJ files (ASCII)

lowpoly Lobes is the only model with no normal definition in it

## BDS files (DSK)

Conversion to OBJ files with dsxexp successful (visual inspection only)

dskbrief output checked = OK

# SHAPE MODELS

| Model              | DupVert | DupFaces | UnrefVert | ZeroAreaF | TJunctions |
|--------------------|---------|----------|-----------|-----------|------------|
| Stereo             | 0       | 0        | 0         | 0         | 0          |
| Lobes<br>(hipoly)  | 0       | 0        | 0         | 0         | 57         |
| Lobes<br>(lowpoly) | 56      | 0        | 0         | 0         | 8          |
| Merged             | 0       | 0        | 0         | 0         | 0          |

## Minor Remarks:

- Duplicate vertices in the Lobes lopoly model
- T-junctions in the Lobes models

# ALBEDO/REFLECTANCE

## Products

CA06 albedo and reflectance

IMG binary file (+LBL)

ca06\_stack\_albedo

ca06\_stack\_normal\_reflect

## Remarks

Image ID given = CA06

Acquisition time missing?

needed to georeference pixels

Some values out of physical range

near the edges of the object

=> define "nodata" value?

For reflectance: bidirectional reflectance (assumed) or I/F?

No bibliographic reference

PNG snapshot?

