

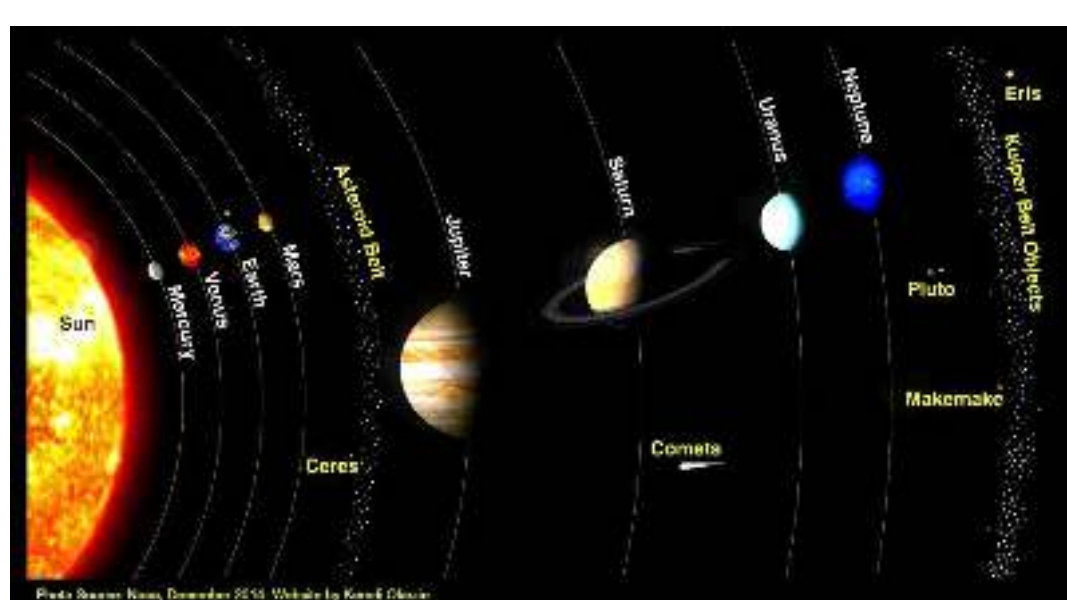
UMkhathilibe Ephaketheni Lami

# Uhlelo lweLanga



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## Ukudaleka koHlelo leLanga

Uhlelo lweLanga ladaleka emiyakeni eyizigidimbili ezingu-4.6 eyedlule. Lokhu sikwazi ngesikufunde kwiziQhumanyezi kanye nemiyonzi.

Konke kwaqala ngeFu loMoya kanye noThunqathunqa. Isidangazelakazi esasisondelene nalelifu salihalahalazisa, okwadala ukuthi leliFu lifingqane ngenxa yomNyondo, kwakheke isicaba, isicaba esintingilizayo esinenigi lotho olutholokala kuMongo: isiFingo

Ngamuva, uMnyondo wadonsa yonke impahla yaba isihlekehleke waphinda wambulukisa enye ukudala imiZulwane kanye nemiZulwane esicwe. Izinsalela zadala iziBhaqanyezi, imiHlabana, kanye neziQhumanyezi.

Uhlelo lweLanga lwakhiwe iLanga kanye nakho konke okuyingiliza iLanga: imiZulane, imiZulane esicwe, iziNyanga, imiHlabane, iziBhaqanyezi, iziQhumanyezi....

Cishe izinto ezingama-25 kuhlelo lweLanga zinobubanzi obungaphezulu kwamakhilomitha ayi-1 000: iLanga, imiHlaba esamoya, imiHlaba ematshe, imiHlaba esicwe, kanye nalokho okuyingiliza ilanga kude kunoNolundwa.

Ezinye izingxenye (imiHlabana, kanye nemiZwayi) zincane kakhulu.

# ILanga

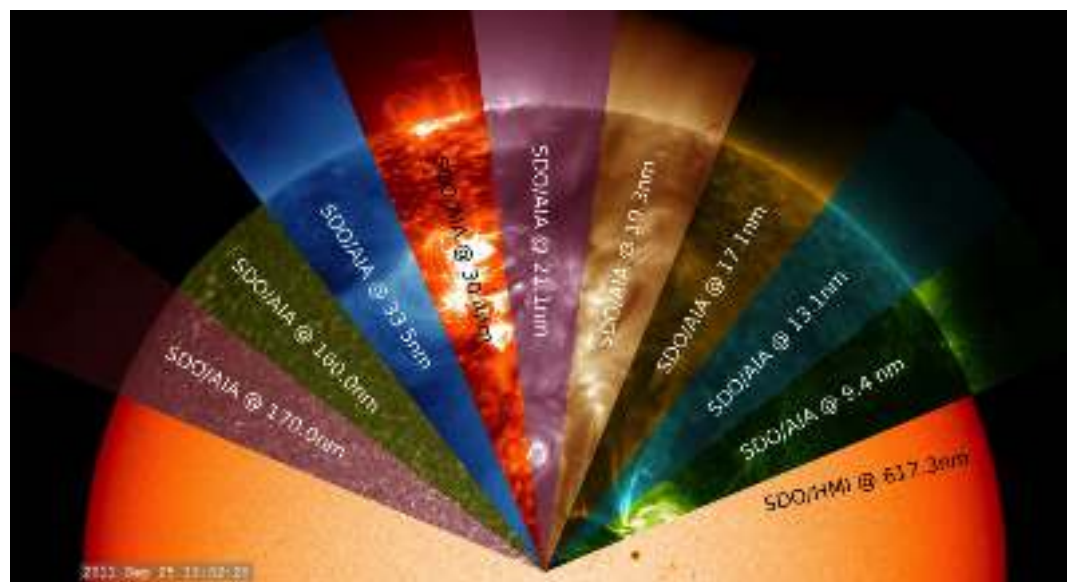
ILanga liyiNkanyezi. Litholakala kumongo wohlelolanga kanti liqukethe inani elingama-99.9% wesisindo sohlelolanga.

ILanga linesisindo esingumumo kwiziNkanyezi. IziNkanyezi ezinkulu kunazo zonke ziba nesisindo esiphindeke kwikhulu ukudlula iLanga, kanti ezincane ziba nesisindo esiphindeke ishumu ngaphansi kwelanga.

Konke ukushisa nokukhanya okuqhamuka eLangeni kuqhamuka kwiNdeni yelanga lapho khona kwenzeka ingxubano hwanzi.

KwiNuzi yelanga amazanga okushisa alinganiselwa kwizigidi eziyi-15.

IWonga leLanga lidala izehlakalo eziningi ezahlukene ezifana namabala ansundu, izidanguzela, iziVungu, kanye nesbalabala esihle esenzeka emhlabeni.



Ngenhla: iLanga, libukwa ngezivovokukhanya ezahlukene(imibala). Ukubuka izinhlobo ezahlukene zokukhanya kuvumela ososayensi ukuthi bafunde ngakho konke okwenzakala eLangeni. Isiboniselo, amabala ansundu angwanqa kwisokhanya (400 kuya ku-700 nm) kanti kuzikhwathi ayabengeza. ukukhazimula kweLanga kubukhazi kakhulu kuzukhwathi (10 kuya ku-100nm) kanye nakwixamagu (1 kuya ku-10 nm).

Kwesokudla: Imibalabala idalwa ukushayisana kwohoyane olujiyile olusuka eLangeni kanye namaChwe asemoyeni womhlaba.





AmaBhola amele imiZulane eyahlukene yohlelolanga. Kwisithombe ngasinye ubungaka obusimelana bemiZulwane bukhonjisiwe.



Kwesokudla:  
uMkhulukhulwana,  
uNomaxhama,  
uNomakhekheba,  
uNolundwa,  
uNomkhubulwana,  
uNokhwezi,  
uNotshezi,uNomjubane.

Kusukela kwisinxele kuya kwesokudla kanye naphezulu kuya phansi:

Kwisinxele:  
uNomkhubulwane,  
uNokhwezi,  
uNotshezi,uNomjubane.



Kwisinxele:  
iLanga,uNomkhulukhulwana,  
uNomaxhama,  
uNomakhekheba,  
uNolundwa,uNomkhubulwana,  
uNokhwezi,  
uNotshezi,  
uNomjubane.

# ImiZulane

Incasiso yokuqala yomZulane yanikezwa ngoNcwaba, kowezi-2006 inikezelwa inhlango i-IAU. Ngokwalesisichasiso umZulane uNochoko `wayeka' ukuba umZulane wesi-9.

UmZulane into:

- 1) ezungeza iLanga,
- 2) enesisindo esanele ukuthi imbulungiswe uMnyondo wayo, futhi
- 3) esivuculule indle yayo lezozinto ezincanyana kunayo.

Into enelisa u- 1) no- 2) kodwa hhayi u- 3) njengoNochoko noma uSirisi ibizwa ngemiZulane esicwe.

Uhlelo lwanga luqukethe imiZulane eyisishyagalombili : Emine efana noNomkhubulwane (uNomjubane, uNokhwezi, kanye no) kanye nemine esMkhulukhulwana (uNomaxhama, uNomakhekheba, kanye noNolundwa ).



kwesokunxele: uSirisi umHlabana omkhulu kunayo yonke enkatheni kanti futhi uwumzulane osicwe. Isithombe sikhombisa amabala agqhamile ebusweni bawo.

kwesokudla: i-Philae kwaba ithuluzi lokuqala ukuthi lihlale ebusweni boBhaqanyezi i-67P/Churyumov-Gerasimenko.



kwesesinxele: Iqhumanyezi i- 'La Concepcion'. Lisinda ngaphezulu kwamathani ama-3. Libukiswa e-Institute of Astronomy, e-Mexico City.



## Okunemzimba Emincanyana

- ImiHlabana amatshe azungeza ilanga. Ubukhulu bayo **bufinyelela kwi khulu** lamaKhilomitha. Atholakala kwiBhande eliphakathi kwaNotshezi kanye noMkhulukhulwana, elibizwa ngokuthi isEnkatheni.

- uBhaqanyezi amabhola enziwe ngamaqhwa kanye nothuli avela emhlonzatshe kanye nakwisingungalanga. kwesinye isikhathi iziBhaqanyezi ziye zisondele elangeni, okuzincibikalisayo. Oludume ilelo elibizwange-Halley's comet, elivakasha njalo eminyakeni eyama-75.

- IziQhumanyezi amatshe adandabuza uhlelo lweLanga. Uma zingena emoyeni womhlaba zibizwa ngeziQhumanyezi. Uma zisinda ekuqheshulweni umoya, zifika ebusweni bomhlaba, zibizwa ngamatshe omkhathini.

- Izinyanga iziZungezimhlaba zemvelo

# Izindawo Kuhlelo Lwelanga

Enkatheni lqukethe imHlabana elinganiselwe kwizigidimbili. LemiHlabana yadaleka ekudalekeni kohlelo lweLanga kanti agcina esebanjwe umNyondo kaMkhulukhulwana esemisa okweNkatha.

Umhlanzatshe Uqukethe ikhulu lezinkulungwane zoBhaqanyezi kanye nokunye, okufana noNochoko.

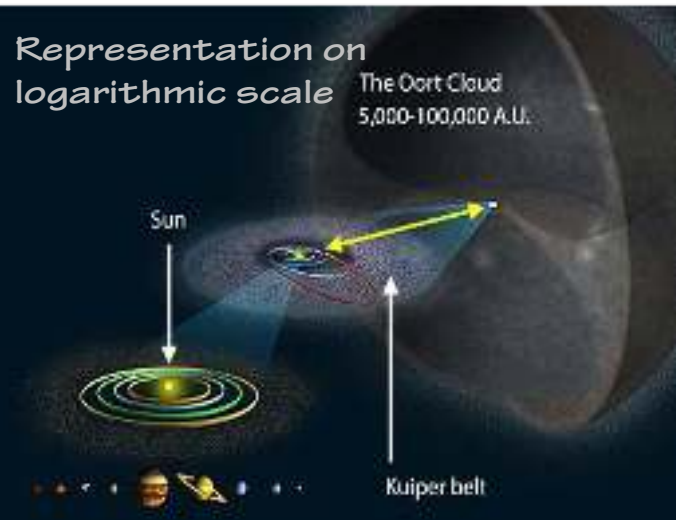
Isihaqalanga lfu elakhiwe izinto ezincane elitholakala emaphethelweni ohlelo lweLanga. Likude kunathi kanti likhulu ngalendlela yokuthi iVoyager 1 (umdlozinga womkhathi owanyakulwa ngowe-1977) kuzoyithatha amakhulu eminyaka ukuthi ifike kusona kanti kuyoyithatha izinkulungwane zeminyaka ukuthi iyidabule iphinde iyidlule. Ngesivini sokukhanya (amamitha ayizi-300,000 kumzuzwana), kungathatha unyaka ukuhamba usuke eLangeni uya kwisiHaqalanga.

kwesinxele:  
Enkatheni  
ephakathi  
kwaNotshezi  
noMkhulukhulwana

kwesokudla:  
uMhlonzatshe  
utholakala  
mawudlula  
umzila  
wokuzungeza  
kwNolundwa.



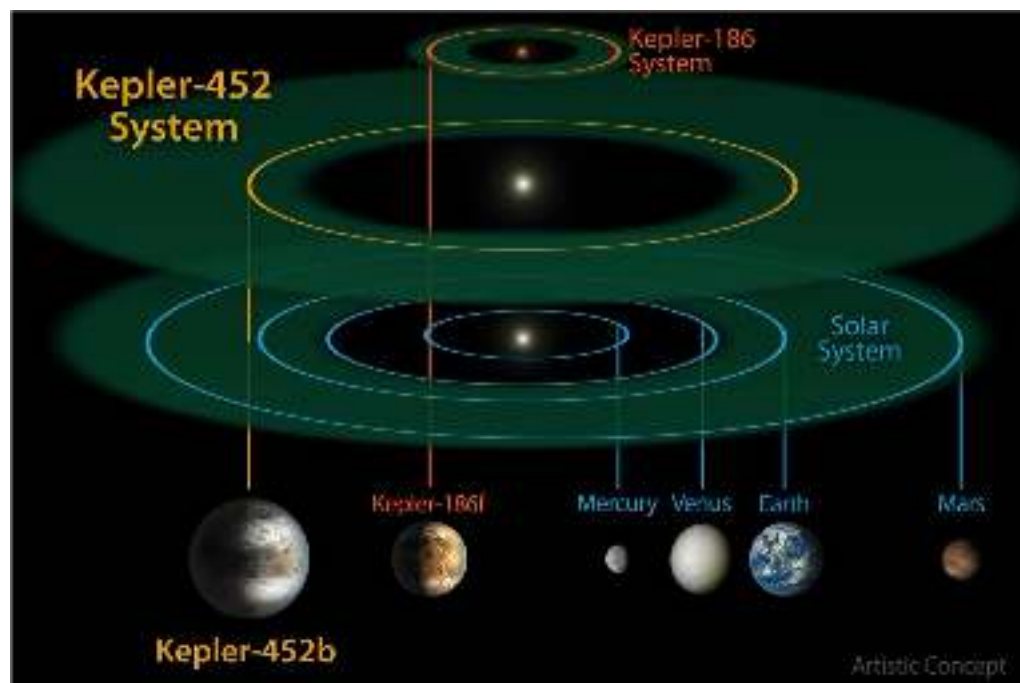
kwisinxele:  
Isingunga  
langa  
siqukethe  
isigidintathu  
sokusamaqh  
wa kunqenqe  
lohlelo lwela







Umdwebo  
okhombisa ubuso  
bomzulane i-proxima  
b owaphakanyiswa  
uzungeza inkanyezi  
esondelene nelanga  
lethu.



Ekugelezeni indawo engunge iNkanyezi lapho  
aManzi ekwazi ukugeleza khona ebusweni  
boMzulane(ngenxa yokuthi amazanga okushisa  
awekho phezulu kakhulu kanti futhi awekho  
phansi kakhulu). Amazanga aluhlaza esisithombe  
ni akhombisa eKugelezeni kwaleNkanyezi  
esanda kukhushulwa.

1 2

## Ezinye Izizungezonzhlelo

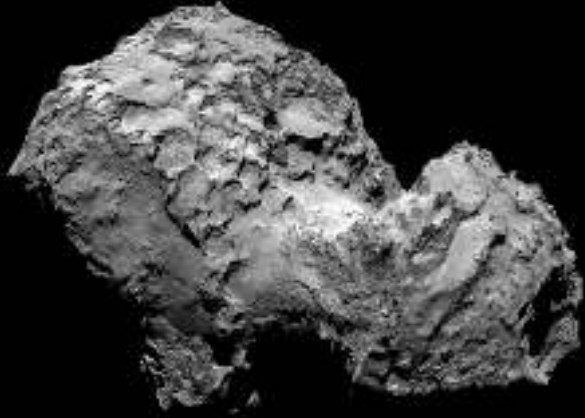
ILanga liyenye lekhulu lezinkulungwane  
zezigididi zeziNkanyezi\* Ezikhona  
kuMzilafasimbe, okuwuMthalakazi  
esiphila kuwona. UMzilafasimbe  
ungomunye yeMthalakazi eyi-  $10^{11}$   
ekhona kuMkhathilibe. Ngabe-ke,  
zingakanani izizungezonzhlelo ezikhona  
kumkhathilibe wonkana?

Unzima lo mubuzo ngoba kunezinhlalo  
eziningi ezahlukene zeziNkanyezi: ezinye  
zishisa kakhulu kanti ezinye zipholile.  
Ezinye ziqhingiwe njenge langa lethu  
kanti ezinye ziyisishimanqa.  
Singacabanga nje ukuthi iningi  
lezinkanyezi kumkhathilibe ziqukethe  
imizulane ewazungezayo.

umzulane ozungeza enye  
waphakanyiswa ngowezi-1998.  
Ekupheleni kowezi-2016, kwase  
kwaziwa elinganiselwa kwizi-3540!

\* bhaleka kanje  $10^{11}$  1 3

# Imibuzo



Ngabe  
lezizinto  
ziyingxenye  
yohlelo  
lweLanga?



Izimpendulo zikwi-  
overleaf

YEBO



uNochoko

uwuMzulane osicwe

Yohlelo lweLanga

Incazelo

CHA



I-Andromida

iwuMthalakazi

onezinhlelo langa eziningi

YEBO

I-67P/IChuryumov-  
Gerasimenko

iwuBhaqanyezi

kuhlelo langa lwethu  
system

CHA

YEBO

I-90482 Okhasi

iwusanochoko

Proksima  
sentawuri

iyiNkanyezi  
esondelene  
nelanga lethu



## Umkhathilibe Ephaketheni Lami No. 4

LeNcwajana ilotshwe ngowezi-2016  
ilotshwa ngu-Gloria Delgado Inglada wase  
Instituto de Astronomía, UNAM  
(eMexico) yase iningilizwa uStan Kurtz  
wase Instituto de Radioastronomía y  
Astrofísica, UNAM (eMexico).

IKhava umdwebo wozungezohlelo  
lweLanga kanye neNkanyezi yawo  
(iLanga), imizulane eyisi-8, kanye  
nezinyanga eziyi-130, uBhaqanyezi,  
imiHlabana, amatshe, kanye neMizwayi.  
uYuthwa: -NASA.

Ezinye iziThombe zithathelwe kwiNASA, i-  
ESA, kanye neHubble archives.



Uma ufisa ukufunda kabanzi  
ngalolu uchungechunge kanye  
nezihloko ezethulwe  
kuleNcwajana, sicela  
uvakashele u-

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Ihumushwe: Nhlanhla Mbambo

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