

Umkhathilibe Ephaketheni Lami



Umkhathilibe Ompekumpeku



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IsiShomo lkhasiyophe, izinkanyezi ezinhlanu eziqhakakile zakha uhlamvu u-W. Lez' zinkanyezi zimandla ngokuphindwe izinkulungwane uma ziqhathaniswa neLanga. Kodwa azikhafuli neze kwimpekumandla.

Ikhulukuxu thizeni elisetshenziwa kumkhakha wempekumandla likwazi ukuhlonga umthanjeva, impiqa kanye nehwithanzuba okukhiqizwa ezinye izinto zomkhathi. Isikalkukhanya sikala ukukhanya okusuka kulezozinto siphinde sisinike umngako wempekumpeku okhafulwa izona.

Iningi lezinto ezikhafula kwimpekumandla azibonakali ngamehlo. 2

Ngamehlo siyabona ukuthi ezinye zezinto zomkhathi ziqhakake ukudlula ezinye. Ingabe ziseduza nathi, ingakho nje ziqhakake kakhulu? Noma ingobe zikhafula impekumpeku eningi?

Ogqayinyanga bayakwazi ukuklala ibanga eliphakathi kwezinto zomkhathi, ngakho-ke bayakwazi ukucishisela ubungako bempekumpeku lezi izinto eziyikhafula kwisokhanya.

Ngokusebenzisa izihlonga thizeni lapho besebenza kwimpekumandla bakwazi nokulinganisa impekumpeku yensokhanya, ekhafulwa uhoyampeku(umthanjeva, impiqa kanye nehwithanzuba), uhoyampeku (umsinya, imvundla) kanye nokuswabuza.

Ezinye zezinto ezikhafula kwimpekumandla, ezifana nesidangazeli, izinkanyezi ezintunga, iziphinqi, noma izingqangqashiya zikhafula impekumpeku enkulu. Zikhafula impekumpeku ephindwe sanqindi mayiqhathaniswa naleyo yelanga.

*Bheka iTUIMP yesi-2 3

IsiDangazeli

kuyethusa ukubona inkanyezi isikloloba emkhathini lapho ebekungekho nkanyezi khona! Mhlawumbe ungazithola usumemeza: sekudaleke inkanyezi entsha! iNova, ngesiLathini.

Noma, isiDangazelekazi, uma ukukhanya kunamandla kakhulu! Eyokuqala ngqa kwakuyileyo eyabonwa uGqayinyanga waseShayina ngo 1054*.

Empeleni lokhu kukhanya akukhombisi inkanyezi ezalwayo: ukudangezela kungukuqhuma kwenkanyezi ephilayo. Lokhu kuqhuma kunamandlangalendlela yokuthi kukhafula impekumpeku elinganiswa naleyo esikhafulwe ilanga lethu emnyakeni eyizigidigidi ezi-10! Emva kwalokho, ukuqhuma kuyakhwathalala inkanyezi ingabe isabonakala futhi. Izinsalelo kuba izinkanyezi ezintunga noma iziPhinqi. Izipopolo zomkhathi zikhombisa utho oluningi lufuduka.

*Bheka iTUIMP ye-10

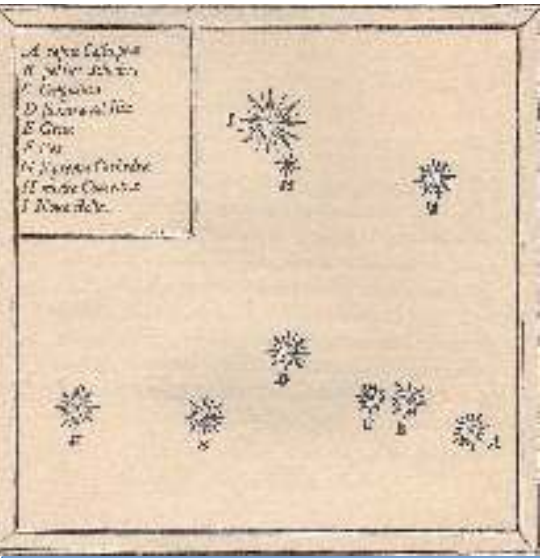
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Kwisinxele: kwimaphu yezinkanyezi yeKhasiyophe, Uggayinyanga uTycho Brahe wabhadeka ngohlamvu 'u-l' inkanyezi entsha, mhla ziyi-11 kuLwezi wama-572, ezaqanjwa ngokuthi izidangezeli zika Tycho. Izinhlamvu u-'F', 'E', 'D', 'C', 'B', 'A', 'G' izinkanyezi eziphila isikhathi eside, kanti ziyabonakala esithombeni seKhasiyophe ekhasinini lesibili, kodwa inkanyezi 'l' ayisabonakali.

Kwisinxele: isiDangazeli i2010ItD, sakhushulwa intombazane eneminyaka eyi-10 ubudala, uKathryn Gray. Ukuqhuma kwenzeka ebangeni

eliyizi-240 million lkwibangakukhanya.

Ekuveleni kwaso, isiDangazeli sikaTycho sasiqhakake okwesicelankobe, yize ukuqhuma kwakwenzeke ebangeni eliyisi-9 kwibangakhanya. Yafiphibala nsukuzonke kwathi emva kweminyaka emibili yase ingasabonakali ngamehlo.





IziGwinqi

Uma iNkanyezi enesisindo esingaphezulu kwaleso seLanga idangazaleka (iqhuma), idala isiGwinqi esinesisindo esingaphezulu kwe samalanga ambalwa endeni yaso, endaweni enobubanzi obungama khilomitha ambalwa.

Kungani kuyigama elingajwayekile na? Ingoba isiGwinqi sinomnyondo onamandla ngalendlela yokuthi ayikho into ekwazi ukuphunyuka kusona. Hhayi ukukhanya, futhi hhayi uhayane!

Sizibona kanjani pho? Ngokuthonya kwazo lokho okusondelene nakzo!

Umnyondompeku wazo unamandla ne ngoba isindo sazo sibanganyelwe endaweni encane. Le mpekumpeku ingakhwibishwa njenge mnyondoza.

Imnyondoza yahlongwa okokuqala ngqa kuMnadulo wonyaka ka-2015.

Yakhiqizwa ukumuhluzana kweziGwinqa ezimbili.

Kwisinxele: Isifanisekisi sikhombisa iziGwinqa ezimbili zimuhluzana. Amakapaza asabalalise okwamagagasi esizibeni amele amadlambi omkhathi.

Amadlambi okuqala ukuthi ahlolongwe abantu mhla ziyi-14 kuMandulo 2015 asifundisa ngalolu uhlobo lokumuhluzana, olwenzeka eminyakeni eyizigidi eziyi-1.3 eyedlule phakathi kwamantshiqe eziGwinqa ezinezisindo ezilinganiselwe kuma-36 kanye nama-29 uma ziqhathanyiswa neLanga lethu. Amandla akhiqizeka kulokhu kumuhluzana afinyelela kulawo akhiqizwa ukukhanya kwazo zonke izinkanyezi kuMkhathilibe!

Kwesokudla: Isithombe esikhombisa iligo eHanford, esinye sezihlongamadlambi. Amadlambi ahlolongwayo afana ntse nalawo abhulwa iGeneral Relativity eyaqhamuka no-Albert Einstein.

ImiSinye

Imisinye iwuhoyane oluyisisekelo olungenamjiyo futhi olunesisindo esincane, esingakaziwa. Luhhahhana ncalala nolunye utho, okwenza kube nzima ukuyihlonza. Emhlabeni jikelele, Sekunemigcanso emikhulu eyakhelwe ukuhlonga yona imisinye.

Imisinye ikhiqizwa imihhahha yenuzi, efana naleyo eyenzeka ezindenini zezinkanyezi noma kwimigcanso yenuzi.

Ekudangazelekeni kwezinkanyezi, cishe u-99% wempekumpeku ungawulukuhlwa njengezinsinye.

Ngaphandle nje kwesisindo sayo, izimfundindalo zikholelwa ukuthi imisinye iningi ngalendlela yokuthi ingathonya umlando womkhathilibe.

Kwesokudla: IceCube Neutrino Observatory. Yakhiwe izinkulungwane zezinzwi ngaphansi kweqhwa laseNtiyazwe, ezindlalwe amakhilomitha amazonya, yakhelwe ukuhlonga imisinye.



Intunge

uma kuqhuma inkanyezi enesisindo esiphakathi kwesi-8 kuya kuma-30 mayiqhathaniswa nesisindo selanga, lokhu sikubiza ngokudangazela, futhi kukhiqiza iNtunga. Ilutheke ngalendlela yokuthi ukhezo olugcwele lungasinda cishe lufinyelele kumathani ayizigidigidi!

Izintunge zakhiwe ngezintebesi kanti futhi zishwiliza okungafika kwi-100 emzuzwini owodwa, okushushisa izinhwayiya ukthi zize zifinyelele cishe kwisivinini sokukhanya nokuphinde kukhiqize uginxi olugqayingekayo. Kwesinye isikhathi, loluginxi lucibalala ubuso bomhlaba, okwenza lezi zinkanyezi zihlonzeke njengeminqonqo*. Umqonqo onesivinini esiphezulu, iPSR J1748-2446ad, ushwiliza ngokuphindwe ama-716 emzuzwini owodwa! Ngesikhathi inkanyezi idangazela, okudala intunge, ngaphandle kokukhanya, umniki omkhulu womsinye ukhafulwa inkanyezi ngesivinini esicishe sifinyelele kwesokukhanya. Omunye wawo uyahlonzeka lapha emhlabeni.

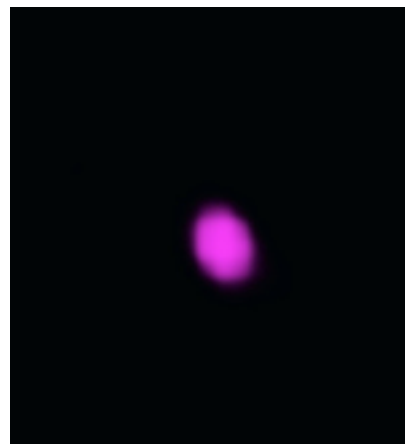


Kwisinxele: Izipopolo IFermi
Gamma-ray Space Telescope, ehlonza imisebe yamahlwithanzuba, okuyimiyonzi empekumpeku

Enamdandla aphindeke izigidid kwimiyonzi yokukhanya.

Mhla ziyi-17 kuNcwaba 2017, izipopolo iFermi zahlonga imdwizo, emva kwemizuzwana ewu-1.7 kukade kuhlongwe kokugebezela komkhathilibe. Zombili lezi zehlakalo zazivela endaweni yesigameko eyodwa, okuyilapho kwakutholana phezulu kwezintunge, ezazisebudeni obulinganiselwe kwizigidi eziyi-130 nasemhlabeni. Emva kwesikhathi, lesi sehlakalo sabonwa kwiqabugala, kumathanjeva, kanye neminye imizwayi yokuhlonga.

Kwesokudla: Tumdwizo
owabonwa izipopolo iFermi usubonya izipopolo iChandra kwiqabugala, emva kweinsuku eziyisi-9.



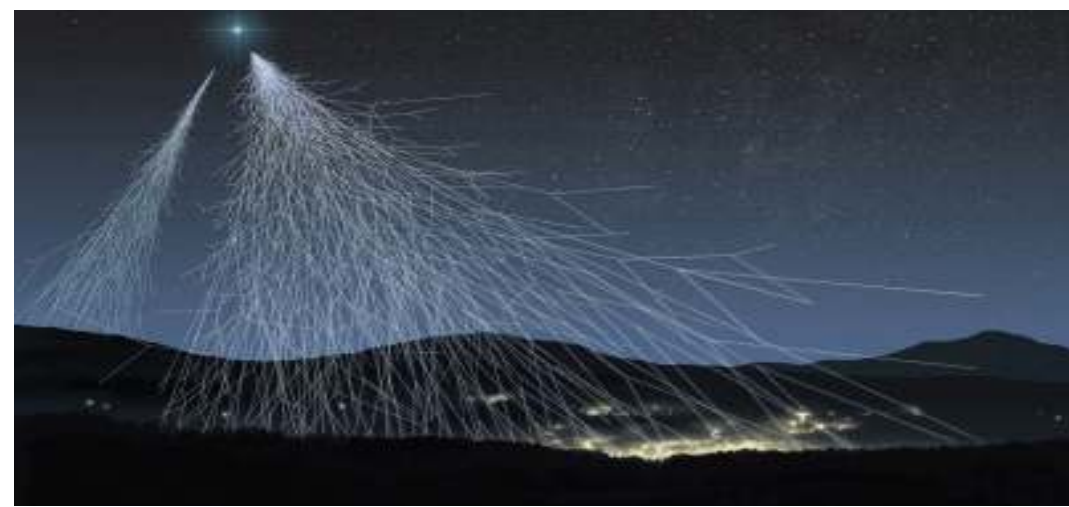
ImiDwizo

Imidwizo ingenye yezinto ezimpekumpeku ezihambisana newigo eyaziwayo kumkhathilibe. Impekumpeku ekhafulwa isahoyampeku* ingadlula ngisho leyo yesidangezelekazi. Yize yakhushulwa eminyakeni engama-50 eyedlule, indlela esebenza ngayo kayikaqondisiswa kahle

Imidwizo ingaba mafuphi (kusukela kumzulaka kuze kuyonfinyelele kemizuzwini emibalwa) noma ibe bulambalala (kusukela kwimzuzu emibalwa kuyofinyelela kumahora). Lena ebulambalala ihambisana nokudangazela. Lena emafuphi yona ihambisana nokutholana phezulu kwezintunge noma kwentunge kanye nesigwinqa.

Sizipopolo ezizungeza umhlaba zihlonga cishe umdwizo owodwa ngosuku.

*Bheka iTUIMP yesi-2



Umdwebon okhombisa imvula yentelahoyane lapho luhhahhana khona nomoya womhlaba. Lapho intelahoyana ihhohhana khona namachembe omoya, kukhiqizeka 'imvula' yohoyane oluyisisekelo. Olunye lalolu uhoyane lungafika ngisho kwizihlonga ezindlalwe izimfundindalo ebusweni bomhlaba.

Emva kwekhuluminyaka lwemigcanso, imininingo yezemvelo ibikhomba ukuthi ingxenye eningi yentelahoyane beluqhamuka ngaphandle komthalakazi wethu, kwizidangazelekazi noma kwimthalakazi engqangqashiya*.

*Bona iTUIMP yesi-6

Intelahoyane

Nakusiyo nje kuphela imbaneka, imisinyanya kanye nomgebezelo womnyondo efinyelela kithi la emhlabeni iqhamuka emkhathini. Umkhathilibe ompekumpeku ubuye usithumele uhoyana olujiyile, iningi lwalo okuyizinqikatha, izinzuba kanye nezinuzi zamachwe; lokhu sikubiza ngokuthi intelahoyane. Izinqindi ngezinqindi zentelahoyane olusuka emkhathini lunethela ebusweni bomhlaba cishe umzuzwana nomzuzwana.

yize yahlongwa kwikhuluminyaka elingama-20, kakaziwa ukuthi luqhamukaphi.

Intelahoyane lungaphatha impekumpeku enamandla, futhi luphinde lugijime ngesivinini esicishe silingane nasleso sokukhanya. Kwesinye isikhathi Impeku yomdiki ingaba izinqindi nqindi ngaphazulu kwempeku yawo yomgidi.



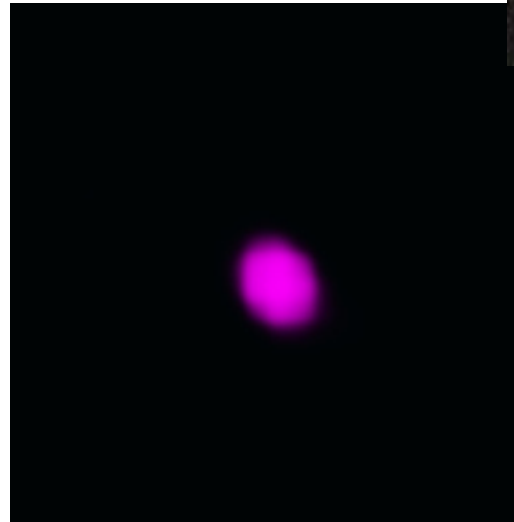
Imibuzo



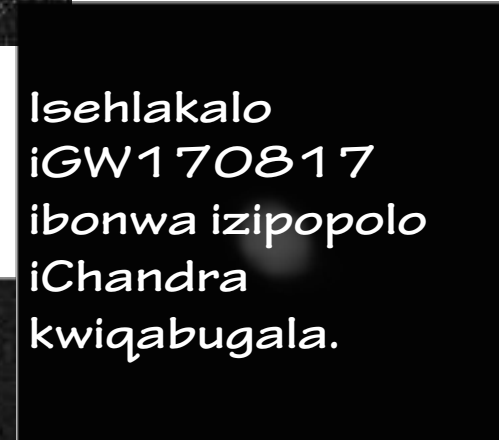
Izinkanyezi ezi-5 ezikhanya kakhulu kwisishomo iCassiopea zinamandla aphindwe cishe i-1 000 kunelanga lethu. **kodwa lokhu akusiko neze ubumpekumpeku!**



Umdwebo okhombisa izingwinqa ezimbili zimuhluzana



Isiphi kulezi izehlakalo esihlangene neze nezehlakalo ezimpekumpeku kumkhathilibe



Isehlakalo iGW170817 ibonwa izipopolo iChandra kwiqabugala.



Isidangazelekazi i2010Ltd.



Izimpendulo zingemuva



ukumuhluzeka kwentelohoyane emoyeni womhlaba.

Umkhathilibe ephaketheni lami wesi-9

Le ncwajana yalotshwa ngonyaka wezi-2018 ilotshwa nguMimoza Hafizi waseNyuvesi yaseTirana (e-Albania) yase iningilizwa nguStan Kurtz wase-UNAM Radio Astronomy Institute eMorelia (eMexico).

Inhlangabeza: Umdwebo wezintunge ezimbili ezitholana phezulu. [Umchachambiso: NSF/LIGO/Sonoma State University/A. Simonnet]



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