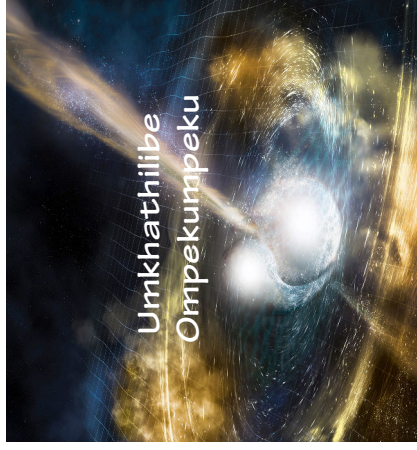


Mimoza Hafizi  
Tirana University



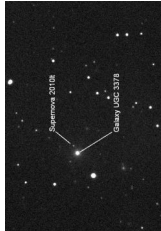
Umkhathilibe Ephaketheni Lami

ImiSinye

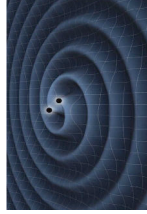
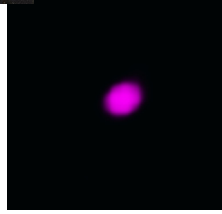
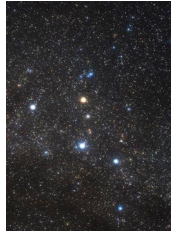
ImiSinye iwahlonyane oluyisisekelo olungeneranjyofuthi olunesisindo esincane, esingakakaziwa. Luhlalhahana ncalala nolunge utho, okwenza kube nzima ukuyihlonza. Emhlabeni jikelele, Sekunemngcaniso emikhulu eyakheliwe ukuhlonza yona imiSinye. ImiSinye ikhizizwa imihlahla yenuzi, efana naleyo eyenzeka ezindeni zezinkanyezi nomna kwimngcaniso yenuzi. Ekudangazela kwenkanyezi, cishe u-99% wemphekumpeku ungawukuhlwa njengeziSinye. Ngaphandle nje kwesisindo sayo, izimfundindalo zikholelwa ukuthi imiSinye iningi ngalendlela yokuthi ingathorya umlando womkhathilibe. Kwesokudala, eCuber Neutronic Observatory, 'Yakhive izikhulungwane zezinzwi ngaphansi kwesqhwaba lesenkhayaza, ezindlelwe amakhomritha amzoronva, yakheliwe ukuhlonza imiSinye.



Izimpendulo zingemuva



Ishipi kulezi izehlakalo esihlangene neze nezehlakalo ezimpekumpeku kumkhathilibe



Imibuzo

Intunge

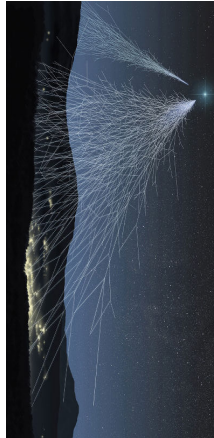
Uma kuqhuma inkanyezi enesisindo esiphakathi kwe-8 kuya kuma-30 mayiqhatshiswa nesisindo selanga, lokhu sikubiza ngokudangazela, futhi kukhiziza INtunga. Iluthreke ngalendlela yokuthi ukhezo olugcwele lungasinda cishe lufhiyelele kumathani ayizigidigidi! Izintunge zakhiwe ngezintebesi kanti futhi zikhawiliza okungafika kwi-1 00 emzuzwini owoowa, okushushisa izinhlayiya ukuthi zize zifhiyelele cishe kwisivivini sokukhanya nokuphinde kukhizize uqhini olugqunyakeyo. KweziSinye isikhathi, lolugqunyakeyo luhlalala upuso bomhlaba, okwenza lezi zinkanyezi zihlonzake njengezintunge. Umngqungo osekhulini esiphuzulu, IPGR J1748-2446ed, ushwiliza ngokuphindwe ama-716 emzuzwini owookwazi. Ngesikhathi inkanyezi idangazela, okudala intunge, ngaphandle kokukhanya, umniko omkhulu womsiSinye ukhanyisa inkanyezi ngesivivini esicishe sifhiyelele kwesokukhanya. Omunye wawo uyahlonzeka lapha emhlabeni.

\*Bhekai ITUIMP ye-10 9

13

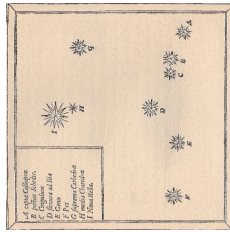
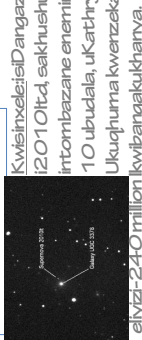
Intelahoyane

Nakusiyi nje kuphela imbaneka, imisiSinye kanye nomgebezelo womnyondo efihiyelela kithi la emhlabeni iqhamuka emkhathini. Umkhathilibe ompekumpeku ubuye usithumele uhoyana olujijile, iningi nezizuzi zamachwe; lokhu sikubiza ngokuthi intelahoyane. Izingqindi ngezinqindi zentelahoyane olusuka emkhathini lunethela ebusweni bomhlaba cishe umzuzwana nomzuzwana. Yize yahlongwa kwikhulumiyaka elingama-20, kakaziwa ukuthi luqharnukaphi. Intelahoyane lungaphatha impekumpeku enamandla, futhi luphinde lugijime ngesivivini esicishe silingane nasleso sokukhanya. KweziSinye isikhathi Impeku yomdiki ingaba izinqindi nqindi ngaphazulu kwempheku yawo yomgidi.



Umdw ebon okhombisa imvula yentelahoyane laphe luhlalhahana khona nomoya womhlaba. Laphe intelahoyana ihlohlanana khona namachembe omoya, kukhizizaka 'imvula' yohoyane oluyisisekelo. Olunye lalolu uhoyane lungafika ngisho kwizihlonza ezindlalawe izimfundindalo ebususweni bomhlaba. Emva kwekhulumiyaka lwemngcaniso, imintiningo yezemvelo ibikhomba ukuthi ingxenyane eningi yentelahoyane beluqharnuka ngaphandle komthlalakazi wetshu, kwizidangazelekazi nomna kwimthlalakazi engqanqaqashya\*.

\*Bona ITUIMP yesi-6 12



Ekaveleni kwaso, isidangazeli sikaTycho saasigqakake okwesicelanokobe, yize ukuqhuma kwakwenzake ebangeni eliyisi-9 kwibangakhanya. Yafihlala risukuzontke kwathi emva kweminyaka emibili yase ingasabonakali ngamhelo.

Kwisinxesha idangazeli 2010 bcd, sakhushulwa intombazane eneminyaka eyi-10 ubudala, ukathryn Gray. Ukuqhuma kwenzeka ebangeni eliyisi-240 million kwibangakhanya.

Isidangazeli

Kuyethusa ukubona inkanyezi isikloloaba emkhathini laphe ebekungekho nkanyezi khona! Mhlawumbi ungazithola usunamenza: sekudalaleke inkanyezi entshal iNova, ngesilathini. Nomna, isidangazelekazi, uma ukukhanya kunamandla kakhulu! Eyokuqala ngqqa kwakuyileyo eyabonwa uGagayinyanga waseShayina ngo 1 054\*. Empeleni lokhu kukhanya akukhombisi inkanyezi ezalwayo: ukudangazela kunqokukhuma kwenkanyezi ephilayo. Lokhu kuqhuma kunamandlangalendlela yokuthi kukhathala impekumpeku elinganiswa naleyo esikhawulwe langa lethu emnyakeni ayizigidigidi ezi-1 01! Emva kwaloluhlo, ukuqhuma kuyakwathalala inkanyezi ingabe isabonakala futhi. Izinsalelo kuba zinkanyezi ezintunga nomna iziPinqi. Izipopolo zomkhathini zikhombisa utho oluningqi lufuduka.

\*Bhekai ITUIMP ye-10 5

**IziGwinqi**

Uma iNkanyezi enesisingdo esingaphhezulu kwaleso eelanga idlangazaleka (iqhuma), idala isiGwinqi esinesisingdo esingaphhezulu kwe samalanga ambalwa endeni yaso, endaweni enobubanzi obungama khilomitha ambalwa.

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

Sizibona kanjani pho? Ngokuthonya kwazo lokho okusondelene nakzoo!

Umnayondompuku wazo unamandla ne ngoba isindo sazo sibanganyelwe endaweni encane. Le mpekumpeku ingakhwibishwa njenge mnyondoza. Imnyondoza yahlongwa okokuqala ngga kuMnadulo wonyaka ka-2015. Yakhqiqizwa ukumhuluzana kweziGwinqa ezimbili.



IsiShomo IkhasiyoPha, izinkanyezi ezinhlamu eziziphakakile zakha uhlamvu u-W. Lezi zinkanyezi zimandla ngokuphinda we izinkulungwane uma ziqhathaniswa nelanga. Kodwa azikhatfuli neze kwimpekumandla.

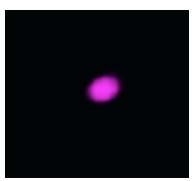
Ikhulukuxu thizeni eliseetshenziswa kumkhakha wemppekumandla likwazi ukuthonga umthanjelwa, impiqa kanye nehwiwthanzuba okukhizwa ezinye izinto zomkhathi. Isikalukhanya sikala ukukhanya okusuka kulwezintlo siphinde sisinike umngako wemppekumpeku okhatfula izona.

Iningi lezinto ezikhatfula kwimpekumandla azibonakali ngamhlo. **2**

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

**Kwiisixelelo: izipopolo iFermi Gamma-ray Space Telescope ehlonza imisebe yamaqhathazuba, okuyintyonzemppekumpeku Enamdamla aphindeke izigildi kwimiyonzi yokukhanya.**

Mhla ziyi-17 kuNcwaba 2017, izipopolo iFermi zahlonga indwizo, emva kwentuzuzwana ewu-1.7 kukade kuhlongwe kokugebezela komkhathilibe. Zombili lezi zehlaakalo zazivela endaweni yesigameko eyodwa, okuyilapho kwakutholana phezu kwezintunge, ezazisebudeni obulinganiselwe kwizigidi eziyi-130 naseemhlabeni. Emva kweisikhathi, lesi sehlaakalo sabonwa kwiqabugala, kumathanjelwa, kanye neminye imizwayi yokuhlonga.



**Umdlwibo okhombisa izingwinqa ezimbili zimhuluzana**

**Izinkanyezi ezi-5 ezikhatfula kakhulu kwisikhonno Caelelopezizhanandla ephindwe elish-1000 kunelanga lethu kodwa lokhu akusiko neze dummpekumpeku!**

**Isehlakalo iGW170817 ibonwa izipopolo iChandra kwiqabugala.**

**Izidangazeli ekazi i2010Itzi.**

**Ukumnuluzeka kwentlalo hooyane emoyeni womhlaba.**

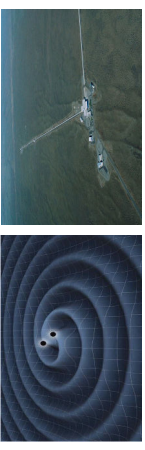
**ImiDwizo**

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

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

Sizipopolo ezizungeza umhlaba zihlonga cishe umdlwizo owodwa ngosuku.

\*Bheka ITUMIP yesi-2



**Kwiisixelelo: Isifanisekisi sikhombisa iziGwinqa ezimbili zimhuluzana. AmaKapaza asabalalise okwamaqagasi esizibeni amele amadlambi omkhathi.**

Amadlambi okuqala ukuthi ahlongwe abantu mhla ziyi-14 kuMandulo 2015 aefundisa ngalolu uhlobo lokumhuluzana, olwenzeka kwamaantehiqe eziGwinqa ezinezisindo ezilinganiselwe kuma-3G kanye nama-2.9 uma ziqhathanyiswa neLangal lethu. Amandla akhizeka kubkhu kumhuluzana afinyelela kulawo akhizizwa ukukhanya kwazo zonke izinkanyezi kuMkhathilibe!

**Kwesokudla: Isithombe esikhombisa Iigo eHanford, esinye sezihlongamadlambi. Amadlambi ahlongwayo afana ntese nalawo abhulwa iGeneral Relativity eyaqhamuka no-Albert Einstein.**

**Umkhathilibe ephaketheni lamni wesi-9**

Le ncwajana yalotshiswa ngonyaka wezi-2018 libotshwa nguMimoza Hafizi waseNyuvesi yaseTirana (e-Albani) yase ingilizwa nguSten Kurtz wase-UNAM Radio Astronomy Institute eMorelia (eMexico).

Inhlangabezani: Umdlwibo wezintunge ezimbili ezitholana phezu. [Umhachambiso: NSF/LIGO/Sonoma State University/A. Simomet]



Ukuze ufunde kabanzi ngalolu uchungethunge kanye nezihloko ezethulwe kulencwajana, sicela ukasahlele ku- <http://www.tuimp.org>

Ihumnshwe: Nhlamha Mbanbo TUMIP Creative Commons



Ngamhlo siyabona ukuthi ezinye zezinto zomkhathi ziphakake ukudlula ezinye. Ingabe ziseduza nathi, ingakho nje ziqhakake kakhulu? Noma ingobe zikhatfula impekumpeku eningqi?

Ogqayiryanaga bayakwazi ukukhala ibanqa eliphakathi kwezintlo zomkhathi, ngakho-ke bayakwazi ukucishelela ubungako bemppekumpeku lezi izinto eziyikhatfula kwisokhanya.

Ngokusebenzisa izihlonga thizeni lapho besebenza kwimpekumandla bakwazi nokulinganisa impekumpeku yaseokhanya, ekhatfula uhoyampeku (umthanjelwa, impiqa kanye nehwiwthanzuba), uhoyampeku (umsinjya, irivundla) kanye nokuswabuzza. Ezinye zezinto ezikhatfula kwimpekumandla, ezifana nesidangazeli, izinkanyezi ezintunge, iziphinqi, noma izingqangqashiya zikhatfula impekumpeku enkulu. Zikhatfula impekumpeku ephindwe sanqindi mayiphathaniswa naleyo yelanga.

\*Bheka ITUMIP yesi-2