My life encounter with Professor Yakiv Pavlenko

Zenghua Zhang

2025.9.3, La Gomera


La Laguna, 2016.10.9

La Laguna, 2016.10.9


La Laguna, 2016.10.9

RoPACS: Rocky Planets Around Cool Stars

A Marie Curie Initial Training Network

The RoPACS Project

The decade since the first extra-solar planetary discoveries has seen the field mature into a vibrant discipline at the heart of astronomical research. Strategic planning processes around the globe have placed extra-solar planetary science at the core of the "Big Questions" for future investment. ALMA will reveal planet forming disks around young nearby stars, and the space-based missions COROT and Kepler will search for earth-like planets around solar-like stars, feeding both current and planned facilities like Europe's Very Large Telescope (VLT), the Hubble and Spitzer Space Telescopes (HST and SST), the next generation James Web Space Telescope (JWST), future space interferometry missions like Darwin, and the new breed of 30-50m Extremely Large Telescopes (ELTs). The European Space Agency's (ESA) "Cosmic Vision 2015-2025" proposal process (currently taking place) will select the space missions that will, over the next 2 decades, provide the technology to reveal planet properties and their potential for life. However, Sun-like stars represent only a small fraction of potential planet hosts, and the full variety of habitable planets may orbit a wide range of different types of star. Probing for planets around different types of star is a relatively new field, but the great potential and importance as well as the opportunities to capitalise on current and future investment, make this very much a growth area.

Merry X-mas and Happy NY :)

Pavlenko Ya.V. <yp@mao.kiev.ua> 22 Dec 2010, 07:17
to me

Dear ZengHua,

I wish you and yours Merry Christmas and Happy New Year!

Pls, change the greeting card using your mouse:)

http://www.elion.ee/docs/joulukaart/eng/

All the best in 2011,

yp

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* * * * * *

referee letter

Inbox ×

ZengHua Zhang <zenghuazhang@gmail.com> 13 Jun 2013, 12:23
to Yakiv

Hi Yakiv,
How are you?

I plan to submit my application for the IAC postdoc tomorrow.
I am wandering will be have time to prepare a referee letter for me?

Here is my webpage which might have useful information for you to form the referee letter.
http://star-www.herts.ac.uk/~zz/

My CV is here:
http://star-www.herts.ac.uk/~zz/cv.pdf

Cheers,
ZengHua

ZengHua ZHANG, PhD
Centre for Astrophysics Research
University of Hertfordshire
http://star-www.herts.ac.uk/~zz/

Pavlenko Ya.V. <yp@mao.kiev.ua> 13 Jun 2013, 12:46
to me

dear ZengHua,

no problem, i do my best...

Besr tregards, yp

...

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* * * * * *
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Monthly Notices of the ROYAL ASTRONOMICAL SOCIETY

MNRAS **434,** 1005–1027 (2013) doi:10.1093/mnras/stt1030
Advance Access publication 2013 July 17

A spectroscopic and proper motion search of Sloan Digital Sky Survey: red subdwarfs in binary systems

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Accepted 2013 June 6. Received 2013 May 15; in original form 2012 August 13

ABSTRACT

Red subdwarfs in binary systems are crucial for both model calibration and spectral classification. We search for red subdwarfs in binary systems from a sample of high proper motion objects with Sloan Digital Sky Survey spectroscopy. We present here discoveries from this search, as well as highlight several additional objects of interest. We find 30 red subdwarfs in wide binary systems including: two with spectral type of esdM5.5, 6 companions to white dwarfs and 3 carbon-enhanced red subdwarfs with normal red subdwarf companions. 15 red subdwarfs in our sample are partially resolved close binary systems. With this binary sample, we estimate the low limit of the red subdwarf binary fraction of ∼10 per cent. We find that the binary fraction goes down with decreasing masses and metallicities of red subdwarfs. A spectroscopic esdK7 subdwarf white dwarf binary candidate is also reported. 30 new M subdwarfs have spectral type of ≥M6 in our sample. We also derive relationships between spectral types and absolute magnitudes in the optical and near-infrared for M and L subdwarfs, and we present an M subdwarf sample with measured *U*, *V*, *W* space velocities.

A&A 582, A92 (2015)
DOI: 10.1051/0004-6361/201526810

Astronomy & Astrophysics

Probing M subdwarf metallicity with an esdK5+esdM5.5 binary

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Received 23 June 2015 / Accepted 28 July 2015

ABSTRACT

Context. We present a spectral analysis of the binary G 224-58 AB, which consists of the coolest M extreme subdwarf (esdM5.5) and a brighter primary (esdK5). This binary may serve as a benchmark for metallicity measurement calibrations and as a test bed for atmospheric and evolutionary models for esdM objects.

Aims. We perform the analysis of optical and infrared spectra of both components to determine their parameters.

Methods. We determine abundances primarily using high-resolution optical spectra of the primary. Other parameters were determined from the fits of synthetic spectra computed with these abundances to the observed spectra from 0.4 to 2.5 microns for both components.

Results. We determine $T_{\rm eff}$ = 4625 ± 100 K, log g = 4.5 ± 0.5 for the A component and $T_{\rm eff}$ = 3200 ± 100 K, log g = 5.0 ± 0.5, for the B component. We obtained abundances of [Mg/H] = + − 1.51 ± 0.08, [Ca/H] = −1.39 ± 0.03, [Ti/H] = −1.37 ± 0.03 for alpha group elements and [CrH] = −1.88 ± 0.07, [Mn/H] = −1.96 ± 0.06, [Fe/H] = −1.92 ± 0.02, [Ni/H] = −1.81 ± 0.05 and [Ba/H] = −1.87 ± 0.11 for iron group elements from fits to the spectral lines observed in the optical and infrared spectral regions of the primary. We find consistent abundances with fits to the secondary albeit at lower signal to noise.

Conclusions. Abundances of different elements in G 224-58 A and G 224-58 B atmospheres cannot be described by one metallicity parameter. The offset of ~0.4 dex between the abundances derived from alpha element and iron group elements corresponds with our expectation for metal-deficient stars. We thus clarify that some indices used to date to measure metallicities for establishing esdM stars, based on CaH, MgH, and TiO band system strength ratios in the optical and H_2O in the infrared, relate to abundances of alpha-element group rather than to iron peak elements. For metal deficient M dwarfs with [Fe/H] < −1.0, this provides a ready explanation for apparently inconsistent metallicities derived with different methods.

Monthly Notices of the ROYAL ASTRONOMICAL SOCIETY

MNRAS **468,** 261–271 (2017) doi:10.1093/mnras/stx350
Advance Access publication 2017 February 22

Primeval very low-mass stars and brown dwarfs – II. The most metal-poor substellar object

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Accepted 2017 February 7. Received 2017 February 6; in original form 2016 November 27

ABSTRACT

SDSS J010448.46+153501.8 has previously been classified as an sdM9.5 subdwarf. However, its very blue $J - K$ colour (–0.15 ± 0.17) suggests a much lower metallicity compared to normal sdM9.5 subdwarfs. Here, we re-classify this object as a usdL1.5 subdwarf based on a new optical and near-infrared spectrum obtained with X-shooter on the Very Large Telescope. Spectral fitting with BT-Settl models leads to $T_{\rm eff}$ = 2450 ± 150 K, [Fe/H] = –2.4 ± 0.2 and log g = 5.5 ± 0.25. We estimate a mass for SDSS J010448.46+153501.8 of 0.086 ± 0.0015 $M_{\odot}$ which is just below the hydrogen-burning minimum mass at [Fe/H] = –2.4 (∼0.088 $M_{\odot}$) according to evolutionary models. Our analysis thus shows SDSS J010448.46+153501.8 to be the most metal-poor and highest mass substellar object known to-date. We found that SDSS J010448.46+153501.8 is joined by another five known L subdwarfs (2MASS J05325346+8246465, 2MASS J06164006−6407194, SDSS J125637.16−022452.2, ULAS J151913.03−000030.0 and 2MASS J16262034+3925190) in a 'halo brown dwarf transition zone' in the $T_{\rm eff}$–[Fe/H] plane, which represents a narrow mass range in which unsteady nuclear fusion occurs. This halo brown dwarf transition zone forms a 'substellar subdwarf gap' for mid L to early T types.

Monthly Notices of the ROYAL ASTRONOMICAL SOCIETY
MNRAS 533, 1654–1669 (2024) https://doi.org/10.1093/mnras/stae1851
Advance Access publication 2024 August 05

Primeval very low-mass stars and brown dwarfs – VIII. The first age benchmark L subdwarf, a wide companion to a halo white dwarf

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Accepted 2024 July 26. Received 2024 July 23; in original form 2024 May 28

ABSTRACT

We report the discovery of five white dwarf + ultracool dwarf systems identified as common proper motion wide binaries in the *Gaia* Catalogue of Nearby Stars. The discoveries include a white dwarf + L subdwarf binary, VVV 1256−62AB, a gravitationally bound system located $75.6^{+1.9}_{-1.8}$ pc away with a projected separation of 1375^{+35}_{-33} au. The primary is a cool DC white dwarf with a hydrogen dominated atmosphere, and has a total age of $10.5^{+3.3}_{-2.1}$ Gyr, based on white dwarf model fitting. The secondary is an L subdwarf with a metallicity of $[M/H] = -0.72^{+0.08}_{-0.10}$ (i.e. $[Fe/H] = -0.81 \pm 0.10$) and $T_{\rm eff} = 2298^{+45}_{-43}$ K based on atmospheric model fitting of its optical to near infrared spectrum, and likely has a mass just above the stellar/substellar boundary. The subsolar metallicity of the L subdwarf and the system's total space velocity of 406 km s^{-1} indicates membership in the Galactic halo, and it has a flat eccentric Galactic orbit passing within 1 kpc of the centre of the Milky Way every ∼0.4 Gyr and extending to 15–31 kpc at apogal. VVV 1256−62B is the first L subdwarf to have a well-constrained age, making it an ideal benchmark of metal-poor ultracool dwarf atmospheres and evolution.

La Laguna, 2023.8.1