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Pierre de Ponthière <pierredeponthiere@gmail.com>

AAVSONet W28 Transformation coefficients

7 messages

Gordon Sarty <ges125@mail.usask.ca> 6 March 2012 21:15
Reply-To: gordon.sarty@usask.ca
To: pierredeponthiere@gmail.com

Hi,

The basic equations, if I have the definitions right, are:

V-v = Cv + Tv(B-V)
B-V = Cbv + Tbv(b-v)
B-b = Cb + Tb(B-V)

Off hand I can't see a simple relation between Tv and Tb that would lead to your equation. Can you send me your derivation?

Gordon

> Message: 3
> Date: Tue, 6 Mar 2012 14:32:51 +0100
> From: Pierre de Ponthiere <pierredeponthiere@gmail.com>
> To: aavso photometry <aavso-photometry@mira.aavso.org>
> Subject: [Aavso-photometry] AAVSONet W28 Transformation coefficients
> Message-ID:
> <CAAPksB8wQXPL-YVLfHudB_6VyDBm8GW8GgkD_a2zwy9KsA+3w@mail.gmail.com>
> Content-Type: text/plain; charset=ISO-8859-1
>
> Hi,
> In the Bruce Gary document, http://reductionism.net.seanic.net/CCD_TE/cte.html
> the following coefficients are defined for the BV filter combination
> Tbv as reciprocal of slope of (b-v) against (B-V)
> Tb as slope of (B-b) against (B-V)
>
> but in VPhot, the transformation coefficients for W28 are
> Filter Band coefficient Tv [slope of (V-v) against (B-V)]
> Color Index Tbv
>
> If you have your own program, performing the BV calculations according
> the article of Bruce Gary you need Tb and Tbv.
> Playing around with calculations, I found an equation to get the
> needed Tb from the W28 Tv
> Tb = Tv + 1 - 1/Tbv
>
> Does anybody could confirm, if the method and maths are correct?
>
> Thanks in advance
> Pierre
>
> Pierre de Ponthiere (Belgium)

> AAVSO Member (American Association of Variable Star Observers)
> CBA Lesve Observer (Center for Backyard Astrophysics)
> GEOS (European Group of Variable Stars Observation)
> CAB Member (Cercle Astronomique de Bruxelles)
> ACA Astronomie Centre Ardennes member
> http://www.dppobservatory.net

Pierre de Ponthiere <pierredeponthiere@gmail.com> 8 March 2012 00:34
To: gordon.sarty@usask.ca
Cc: aavso photometry <aavso-photometry@mira.aavso.org>

Hi,

Notations,
Bc and Vc standard magnitudes of comparison star (from catalog)
bc, vc, bs, vs measured magnitudes in B and V filters for comparison star (c) and target (s)
Bs and Vs transformed magnitudes for the target star

The main idea was that with (Tbv and Tb) it is possible to get Bs and Vs
having Bs and Vs, you can deduce Tv
So Tv is not independent of Tb, Tbv

It also true for the other pair (Tbv and Tv) and you can get Tb

The maths,
starting with the equations of Bruce Gary article (
http://reductionism.net.seanic.net/CCD_TE/cte.html)

Bs - Vs = (Bc - Vc) + A (22a)
with A = Tbv * [(bs - vs)-(bc - vc)]

Bs = bs + (Bc - bc) + Tb * A (22b)

you can have a similar equation for Tv, which I call (22x)
Vs = vs + (Vc -vc) + Tv * A (22x)

Substracting (22x) to (22b) you get
Bs - Vs = bs - vs + Bc - bc - Vc + vc + Tb * A - Tv * A

(Bs - Vs) = A / Tbv + (Bc - Vc) + Tb * A - Tv * A

as (Bs - Vs) - (Bc - Vc) = A

you get
1 = 1/Tbv + Tb - Tv
and
Tb = Tv + 1 - 1/Tbv

Thanks in advance for your opinion
Pierre
Pierre de Ponthiere (Belgium)
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Michel Bonnardeau <arzelier1@free.fr> 8 March 2012 11:54
To: AAVSO-Photometry <aavso-photometry@mira.aavso.org>

Hi,

You may be interested in my web page about transformations:
http://mbond.free.fr/TRANSF/THa7927.htm

Indeed, after some simple algebra, one gets
1=1/Tbv+Tb-Tv

Kind regards,

Michel
BZU

---- Original Message ---- From: "Pierre de Ponthiere" <pierredeponthiere@gmail.com>
To: <gordon.sarty@usask.ca>
Cc: "aavso photometry" <aavso-photometry@mira.aavso.org>
Sent: Thursday, March 08, 2012 12:34 AM
Subject: Re: [Aavso-photometry] AAVSONet W28 Transformation coefficients
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Aavso-photometry mailing list
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To change options or unsubscribe, goto http://www.aavso.org/mailman/listinfo/aavso-photometry

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arne <arne@aavso.org> 8 March 2012 13:05
To: aavso-photometry@mira.aavso.org

It is true that Tb and Tv are not independent; they both use (B-V). In fact, I am not quite sure why you are trying to derive Tb, since you already have B once you have solved for V. You first have to solve for (B-V), and then use that to solve for V. That gives you

B = V + (B-V)

This is probably a better relation than trying to derive Tb in the manner that you show.
Arne
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> [Quoted text hidden]
>
> ---
>
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Pierre de Ponthiere <pierredeponthiere@gmail.com> 8 March 2012 18:07
To: aavso photometry <aavso-photometry@mira.aavso.org>

I have a photometry program which uses Tbv and Tb to transform B and V magnitudes.
If I want to use this program to reduce and transform B and V images from AAVSONet W28, I have to convert the Tv value provided for W28 scope.
Obviously I could modify my program to use Tbv and Tv, but it is simpler to convert Tv to Tb
with the simple formula Tb = Tv + 1 - 1/Tbv

Pierre
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Stan Walker <astroman@paradise.net.nz> 8 March 2012 22:06
To: arne <arne@aavso.org>, aavso-photometry@mira.aavso.org

Hi Arne,

I think this is one argument that will never have a solution. There are that many items in circulation about transformations and that many websites with methods that are initially attractive to observers that there will never be a universally adopted method. The best to be hoped for is that the differences will be small enough not to affect the data much.

I noted in the discussion of the Mermillion data that Brian Skiff mentioned Eggen's observations. Since many of these were published as V subscript E and probably not fully transformed does this affect much?

I hope to be back in this area of using transformations once daylight saving finishes - the summer in NZ and Aus has been very non-astronomical.

Regards,
Stan

–––– Original Message –––– From: "arne" <arne@aavso.org>
To: <aavso-photometry@mira.aavso.org>
Sent: Friday, March 09, 2012 1:05 AM
Subject: Re: [Aavso-photometry] AAVSONet W28 Transformation coefficients

> It is true that Tb and Tv are not independent; they both use (B-V). In fact, I am not quite sure why you are trying to derive Tb, since you already have B once you have solved for V. You first have to solve for (B-V), and then use that to solve for V. That gives you
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> B = V + (B-V)

> This is probably a better relation than trying to derive Tb in the manner that you show.
> Arne

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Gordon Sarty <ges125@mail.usask.ca> 9 March 2012 19:13
Reply-To: gordon.sarty@usask.ca
To: Pierre de Ponthiere <pierredeponthiere@gmail.com>

The algebra is ok and somewhat clever. However as Arne posted, the smaller the number of calculations between the data and the result, the better.

Gordon

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