

CEDIC '09

Preserving and Enhancing Colours
in L-RGB Images

4 April 2009 - Stefan Heutz

Preserving and Enhancing Colours in L-RGB Images

- Part I – Preserving Colours
 - I. Colour Fading in L-RGB Composites
 - Adjust Opacity of Luminance Image
 - Saturation Command
 - LLRGB
 - LAB
 - II. Colour Fading in Halpha-RGB Composites
 - LAB
 - “Average” Blending
 - “Lighten” Blending
 - Selective Blending

Preserving and Enhancing Colours in L-RGB Images

- Part II – Enhancing Colours
 - Saturation Command
 - PixInsight LE
 - „Soft light“ methode
 - LLRGB

Preserving and Enhancing Colors in L-RGB Images

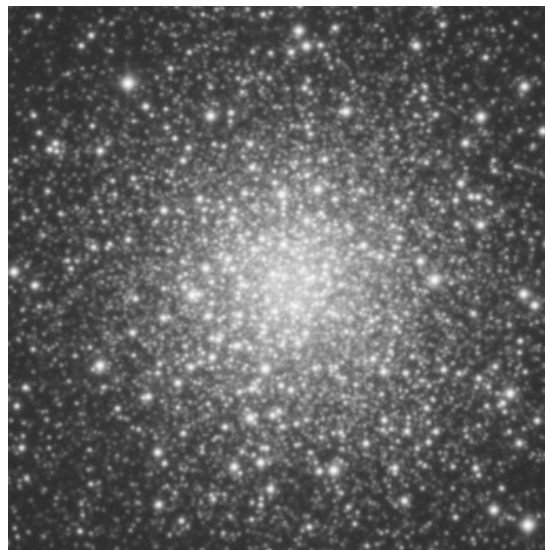
Part I – Preserving Colours

I. Colour Fading in L-RGB Images

- Problem: Combination of deep luminance and short exposed RGB leads to washed out colours



RGB



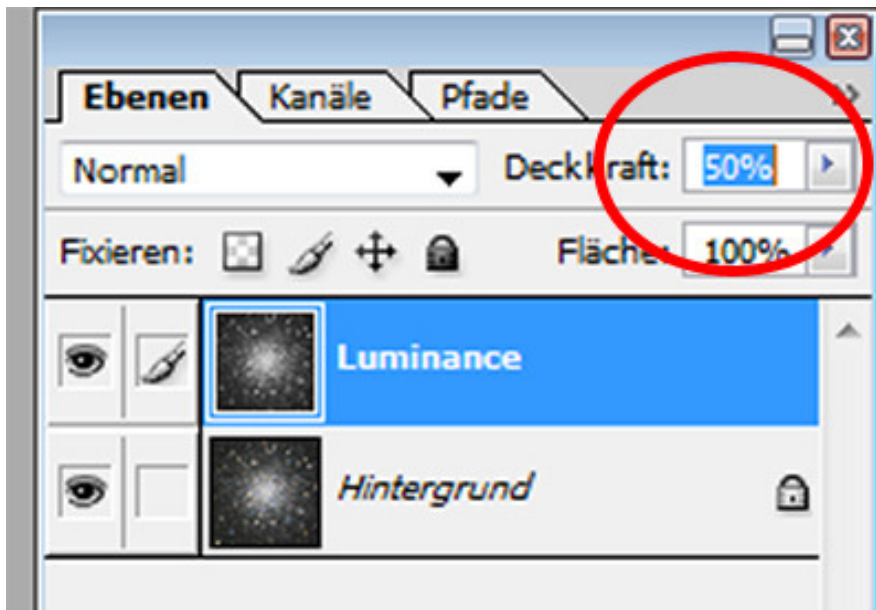
Luminance



L-RGB

I. Colour Fading in L-RGB Images

- Include luminance with reduced opacity



- Result: Loose depth of luminance image
- Result: Loose colour saturation
- Conclusion: Usually no chance to find best compromise between depth and saturation

I. Colour Fading in L-RGB Images

- Increase colour saturation (Photoshop)
 - Result: Get well saturated image
 - Disadvantage: Increase colour noise
 - Disadvantage: Highlights may be clipped



I. Colour Fading in L-RGB Images

➤ LLRGB

- Requires software that allows modification of luminance opacity
- Usually more than two iterations recommended
- Good control over saturation and colour noise
- Disadvantage: Increases colour halos around bright stars

I. Colour Fading in L-RGB Images

➤ LLRGB – Workflow

- Prepare RGB (slightly increase saturation)
- Copy luminance 2-5 times; hide all but one luminance layer
- Include first luminance layer with 30% opacity
- Increase saturation of RGB slightly (appr. 10-15%)
- Flatten image
- Apply gaussian blur (1 px radius)
- Include next luminance layer with 50-80% opacity
- Increase saturation of RGB
- ...

I. Colour Fading in L-RGB Images

➤ LAB

- Preserves colours better than LRGB
- No increase of colour noise
- Degree of improvement differs from image to image

LRGB



LAB

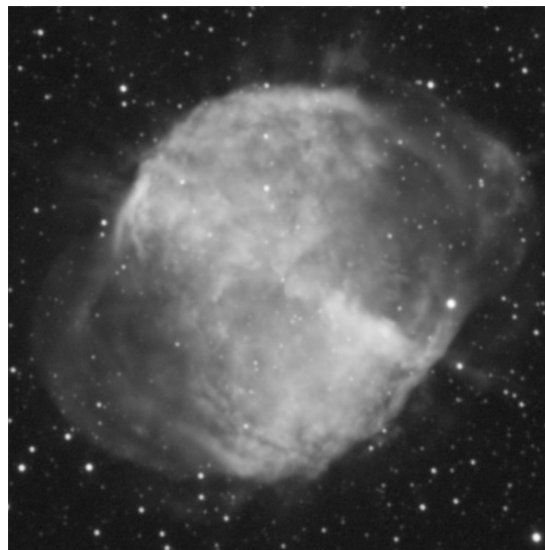


II. Colour Fading in H α -RGB Images

- Problem: Using H α as luminance shifts red tones to "salmon"
- Problem: Colours washed out / colours other than red disappear



RGB



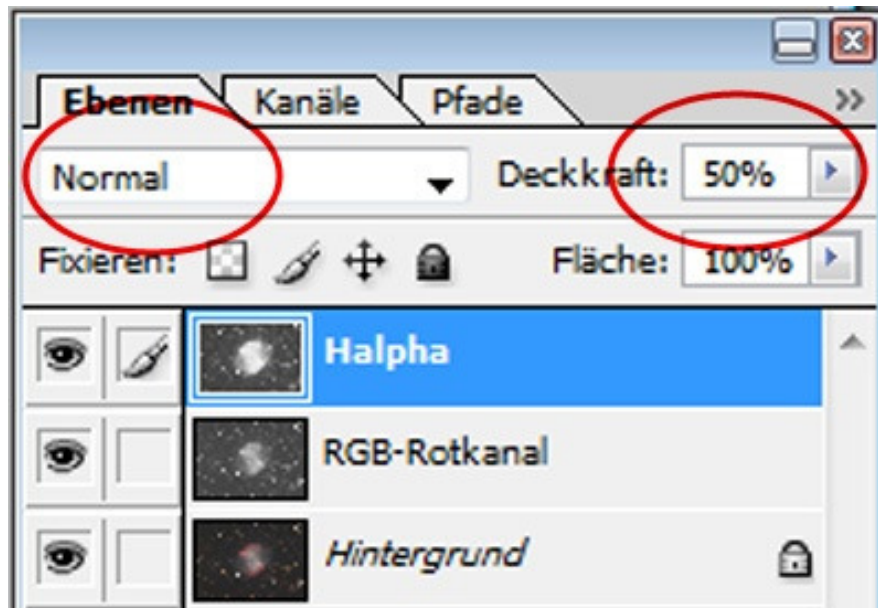
H α



H α -RGB

II. Colour Fading in Halpha-RGB Images

- Blend Halpha into luminance and/or red channel using „average“ blending



- Result: Enhanced details
- Disadvantage: Loose potential of Halpha image
- Disadvantage: Difficult to achieve proper colour balance
- Disadvantage: Colours still washed out

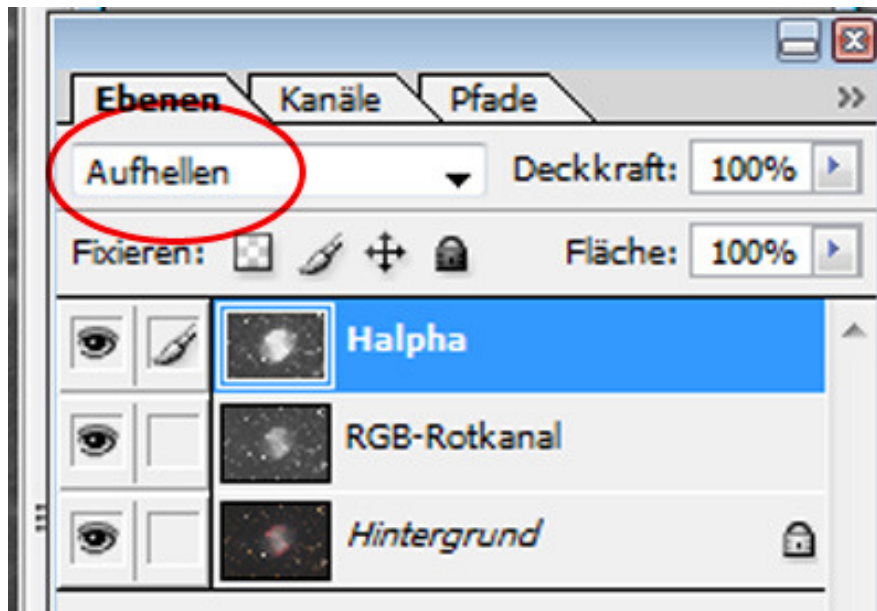
II. Colour Fading in Halpha-RGB Images

- Blend Halpha into luminance and/or red channel using „average“ blending



II. Colour Fading in Halpha-RGB Images

- Blend Halpha into luminance and/or red channel using „lighten“ blending



- Result: Enhanced details
- Advantage: Easier to maintain proper colour balance
- Advantage: Colours not washed out

II. Colour Fading in Halpa-RGB Images

- Blend Halpa into luminance and/or red channel using „lighten“ blending



II. Colour Fading in Halpha-RGB Images

- Blend Halpha into luminance and/or red channel only where needed
 - Blend Halpha in lighten mode using layer masks
 - Advantage: Only partial blending, colour balance maintained
 - Disadvantage: Only for well defined Halpha areas (such as HII-regions in galaxies); not useful for broad structures

II. Colour Fading in Halpha-RGB Images

- Blend Halpha into luminance and/or red channel only where needed



Preserving and Enhancing Colors in L-RGB Images

Part II – Enhancing Colours

Part II: Enhancing Colours

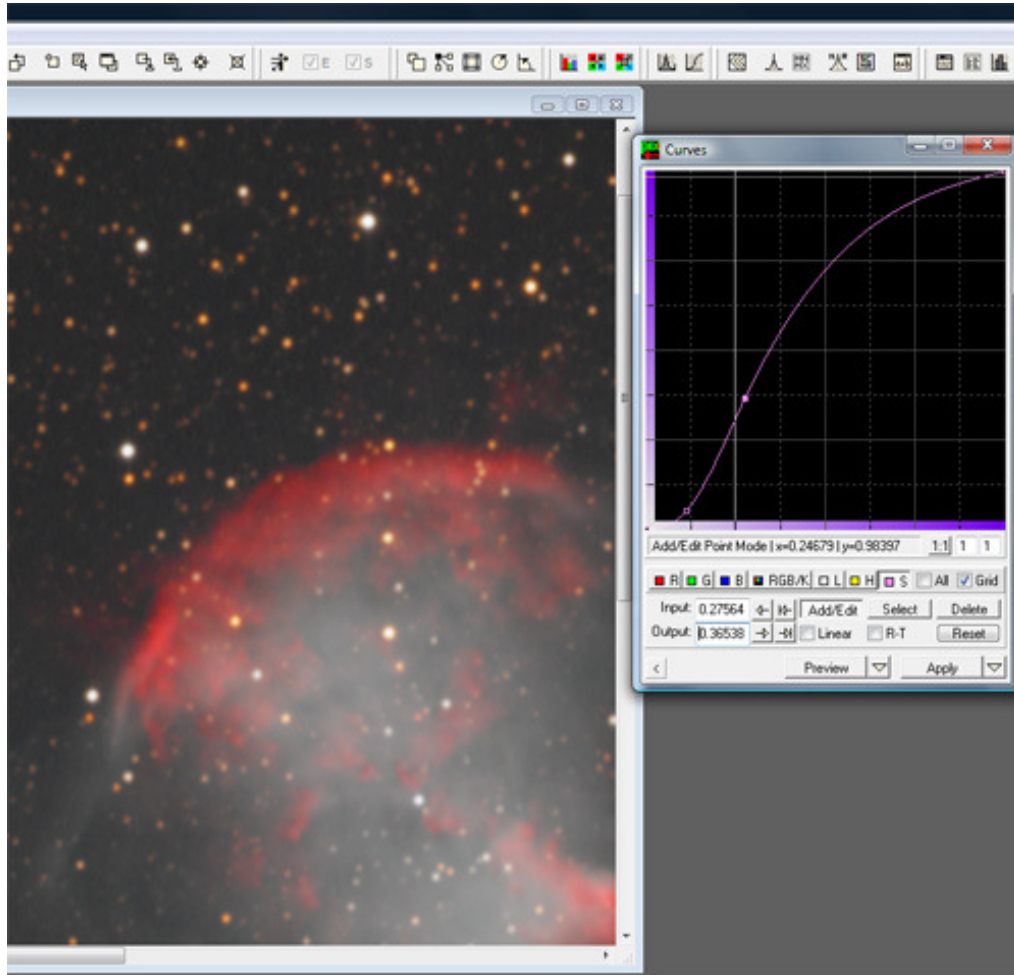
- Increase saturation via “saturation” command in PS



- Advantage: Easy to apply and to adjust intensity
- Disadvantage: Increases colour noise; tends to produce colour halos around bright stars

Part II: Enhancing Colours

➤ Advanced increase of saturation by PixInsight



- Advantage: Independent increase of saturation for highlights, mid-tones and shadows by modulation of saturation curve.
- Disadvantage: To date only applicable via PixInsight; increase of saturation of shadows usually results in increase of colour noise.

Part II: Enhancing Colours

➤ “Soft Light” methode

- Slight desaturation of background thus reducing colour noise in the shadows.
- Increase of saturation in mid-tones and highlights generating less colour noise as saturation command.
- Easy to overdo, needs to be applied moderately. Highlights may look artificially.

Part II: Enhancing Colours

➤ “Soft Light” methode - Workflow

- Duplicate image layer twice
- Set blend mode of second layer to “soft light”
- Set blend mode of third layer to “luminance”

→ RGB on bottom – soft light in the middle – luminance on top

- Season to taste

Part II: Enhancing Colours

➤ Once again: LLRGB

- Increase saturation via saturation command or soft light methode moderately but in several iterations.
- After each iteration, smooth colours applying gaussian blur.
- Best control over noise and saturation. Possible to combine advantages of saturation command and soft light methode.

Part II: Enhancing Colours

Raw:



Part II: Enhancing Colours

Processed:



ASTRO KOOPERATION

Thank you for your attention!

Stefan Heutz
www.astro-kooperation.com