CCD Astroimaging Information

From Observational Astronomy Web Site by David Haworth
http://www.stargazing.net/david/

CCD Astroimaging Books

- **A Practical Guide to CCD Astronomy**, Patrick Martinez and Alain Klotz, 243 pages
  - A guide to choosing and using CCD cameras for amateur astronomers
- **Amateur Telescope Making**, Stephen F. Tonkin
  - Chapter 14 is on building and using a Cookbook CCD Camera by Al Kelly, 14 pages
  - 12 chapters by different authors about their CCD experiences.
- **Astronomical Equipment for Amateurs**, Martin Mobberley
  - Chapter 8 is on electronic imaging, 43 pages
- **Astrophotography for the Amateur**, 2nd Ed., Michael A. Covington
  - Chapter 12 is on Computer Image Enhancement, 26 pages & Chapter 13 is on CCD Imaging, 16 pages
- **CCD Astronomy Construction and Use of an Astronomical CCD Camera**, Christian Buil, 321 pages
  - An intermediate to advanced understanding of CCD camera design, operation and imaging processing.
- **The CCD Camera Cookbook**, Richard Berry, Veikko Kanto & John Munger, 176 pages
  - This book shows you how to build your own CCD camera.
- **Choosing and Using a CCD Camera**, Richard Berry, 96 pages
  - Book includes Quikpix software for PCs
- **Deep Space CCD Atlas: North** (264 pages) and **South** books by John Vickers P.O.B. 1292 Duxbury, MA 02331
  - A good reference of CCD images to verify your objects
- **Electronic Imaging in Astronomy - Detectors and Instrumentation**, Ian S. McLean, 472 pages
  - CCDs and other imaging devices used in professional observatories
  - Covers the fundamental requirements for obtaining good CCD images.
- **The Handbook of Astronomical Image Processing**, Richard Berry & James Burnell, 640 pages
  - A very good book on image processing & it includes *Astronomical Image Processing for Windows* (AIP4WIN)
  - Good intermediate introduction to CCD imaging.
- **Introduction to Astronomical Image Processing**, Richard Berry, 96 pages
  - A beginners’ guide to CCD image enhancement for PCs and basics on CCD imaging processing, includes *Astronomical Image Processing* (AIP245) software
- **The New CCD Astronomy**, Ron Wodaski, 476 pages
  - A very good book to start learning about CCD astronomy
- **Splendors of the Universe: A Practical Guide to Photographing the Night Sky**, Terrence Dickinson, Jack Newton, Terrence Dickinson
  - Covers various aspects of astrophotography including CCD imaging
  - Part 4: More Power to You, 17 pages
- **Video Astronomy**, Steve Massey, Thomas A. Dobbins & Eric J. Douglass, 200 pages
  - A beginners’ guide to using video

Book Stores

<table>
<thead>
<tr>
<th>Company</th>
<th>URL</th>
<th>Cameras</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apogee Instruments</td>
<td><a href="http://www.ccd.com/">http://www.ccd.com/</a></td>
<td>AP Series</td>
<td>CCD cameras</td>
</tr>
<tr>
<td>Finger Lakes Instrumentation</td>
<td><a href="http://www.fli-cam.com/">http://www.fli-cam.com/</a></td>
<td>MaxCam, IMG Series</td>
<td>CCD cameras</td>
</tr>
<tr>
<td>Meade Instruments</td>
<td><a href="http://www.meade.com/">http://www.meade.com/</a></td>
<td>Pictor Series: 201XT, 208XT, 216XT, 416XTE, 1616XTE</td>
<td>CCD cameras</td>
</tr>
<tr>
<td>Santa Barbara Instrument Group (SBIG)</td>
<td><a href="http://www.sbig.com">http://www.sbig.com</a></td>
<td>STV, ST237A, ST5C, ST7E, ST8E, ST9, ST10</td>
<td>CCD &amp; video rate cameras</td>
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<table>
<thead>
<tr>
<th>Software</th>
<th>Source</th>
<th>URL</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>AstroAlign</td>
<td>Carsten Arnholm</td>
<td><a href="http://home.online.no/~arnholm/astro/software/astroalign/AstroAlign.htm">http://home.online.no/~arnholm/astro/software/astroalign/AstroAlign.htm</a></td>
<td>Image processing</td>
</tr>
<tr>
<td>Astroart 3.0</td>
<td>MSB Software</td>
<td><a href="http://www.msb-astroart.com/">http://www.msb-astroart.com/</a></td>
<td>Image processing &amp; camera control</td>
</tr>
<tr>
<td>AstroPIX: CB245, Multi245 &amp; Qcolor</td>
<td>Richard Berry</td>
<td><a href="http://www.wvi.com/~rberry/astropix/astropix.htm">http://www.wvi.com/~rberry/astropix/astropix.htm</a></td>
<td>Image processing for the Cookbook CCD cameras</td>
</tr>
<tr>
<td>AstroStack 2.1.1</td>
<td>Robert J. Stekelenburg</td>
<td><a href="http://www.astrostack.com/">http://www.astrostack.com/</a></td>
<td>Stacking images</td>
</tr>
<tr>
<td>AVI2BMP</td>
<td></td>
<td><a href="http://avi2bmp.free.fr/telechar.htm">http://avi2bmp.free.fr/telechar.htm</a></td>
<td>Stacking images</td>
</tr>
<tr>
<td>AVIDark</td>
<td></td>
<td><a href="http://www.geocities.com/jgroveuk/AVIDark.html">http://www.geocities.com/jgroveuk/AVIDark.html</a></td>
<td>AVI image pre-processing program</td>
</tr>
<tr>
<td>CCDSoft 5.00.077</td>
<td>Software Bisque</td>
<td><a href="http://www.bisque.com/">http://www.bisque.com/</a></td>
<td>Image processing &amp; camera control</td>
</tr>
<tr>
<td>ImagesPlus 1.71</td>
<td>MLUnsold Digital Imaging</td>
<td><a href="http://www.mlunsold.com">http://www.mlunsold.com</a></td>
<td>Image processing</td>
</tr>
<tr>
<td>iMerge</td>
<td></td>
<td><a href="http://www.geocities.com/jgroveuk/imerge.html">http://www.geocities.com/jgroveuk/imerge.html</a></td>
<td>Image-stacking and Mosaic</td>
</tr>
<tr>
<td>IRAF 2.12.1</td>
<td>IRAF Programming Group &amp; NOAO</td>
<td><a href="http://iraf.noao.edu/">http://iraf.noao.edu/</a></td>
<td>Free image processing for UNIX &amp; LINUX</td>
</tr>
<tr>
<td>K3CCD Tools</td>
<td>Peter Katreniak</td>
<td><a href="http://www.pk3.org/Astro">http://www.pk3.org/Astro</a></td>
<td>Camera control, stacking &amp; image processing</td>
</tr>
<tr>
<td>Local Adaptive Unsharp Masking (LAUM) 2.0.0.65</td>
<td>Balthasar Indermuelhe</td>
<td><a href="http://www.inside.net/plugin">http://www.inside.net/plugin</a></td>
<td>Plugin for MIRA, Paint Shop Pro &amp; Photoshop</td>
</tr>
<tr>
<td>MaxIm DL 3.21</td>
<td>Diffraction Limited</td>
<td><a href="http://www.cyanogen.com">http://www.cyanogen.com</a></td>
<td>Image processing &amp; camera control</td>
</tr>
<tr>
<td>MIRA Pro &amp; MIRA AP 7</td>
<td>Axiom Research</td>
<td><a href="http://www.axres.com/">http://www.axres.com/</a></td>
<td>Image processing &amp; camera control</td>
</tr>
<tr>
<td>QMIPS32 1.81</td>
<td>Christian Buil</td>
<td><a href="http://www.astrosurf.com/qm32/">http://www.astrosurf.com/qm32/</a></td>
<td>Image processing</td>
</tr>
<tr>
<td>Sigma</td>
<td>Ray Gralak</td>
<td><a href="http://www.gralak.com/Sigma/">http://www.gralak.com/Sigma/</a></td>
<td>Image combining</td>
</tr>
<tr>
<td>SigmaReject</td>
<td>Russell Croman</td>
<td><a href="http://www.rc-astro.com/resources/sigma_reject.html">http://www.rc-astro.com/resources/sigma_reject.html</a></td>
<td>Image combining plugin</td>
</tr>
<tr>
<td>StellaImage3 &amp; 4</td>
<td>AstroArts</td>
<td><a href="http://www.astroarts.co.jp/index.html">http://www.astroarts.co.jp/index.html</a></td>
<td>Image processing</td>
</tr>
<tr>
<td>RegiStar</td>
<td>Auriga Imaging</td>
<td><a href="http://aurigaimaging.com">http://aurigaimaging.com</a></td>
<td>Registration software</td>
</tr>
<tr>
<td>Registax 2.1.1</td>
<td>Cor Berrevoets</td>
<td><a href="http://abberator.astronomy.net/registax/">http://abberator.astronomy.net/registax/</a></td>
<td>Registration software</td>
</tr>
<tr>
<td>PictorView</td>
<td>Meade Instruments</td>
<td><a href="http://www.meade.com/">http://www.meade.com/</a></td>
<td>Image processing &amp; Pictor camera control</td>
</tr>
</tbody>
</table>
Photo Editing Software Commonly Used for Astroimaging

<table>
<thead>
<tr>
<th>Software</th>
<th>Source</th>
<th>URL</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>IrfanView</td>
<td>Irfan Skiljan</td>
<td><a href="http://irfanview.tuwien.ac.at/">http://irfanview.tuwien.ac.at/</a></td>
<td>Graphics program (free)</td>
</tr>
<tr>
<td>Paint Shop Pro</td>
<td>JASC</td>
<td><a href="http://www.jasc.com">http://www.jasc.com</a></td>
<td>Graphics program</td>
</tr>
<tr>
<td>Photoshop 7.0.1</td>
<td>Adobe</td>
<td><a href="http://www.adobe.com">http://www.adobe.com</a></td>
<td>High end graphics program</td>
</tr>
<tr>
<td>Picture Window 3.5</td>
<td>Digital Light &amp; Color</td>
<td><a href="http://www.dl-c.com">http://www.dl-c.com</a></td>
<td>Full 16 bit editing, many application notes on web site</td>
</tr>
</tbody>
</table>

Build Your Own CCD Camera for Astroimaging

<table>
<thead>
<tr>
<th>Camera</th>
<th>URL</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cookbook CB245 &amp; CB211</td>
<td><a href="http://www.wvi.com/~rberry/cookbook/cookbook.htm">http://www.wvi.com/~rberry/cookbook/cookbook.htm</a></td>
<td>CB245 is very popular, uses TI-245</td>
</tr>
<tr>
<td>Genesis (Audine clone)</td>
<td><a href="http://www.genesis16.net">http://www.genesis16.net</a></td>
<td>Canada/USA version of the Audine CCD camera uses KAF-0401e/-1601e</td>
</tr>
</tbody>
</table>

CCD Astroimaging Accessories

- Flip mirrors & optical filters
- Optec, Inc., http://www.optecinc.com
- Telecompressor lens for CCD cameras, PC-controllable filter slides/filter wheels and pre-viewer equipment
- High end CCD IC manufacturer

CCD Astronomy Magazine

- CCD Astronomy was published from spring 1994 to winter 1997 with four issues per year.
- Obtain the back issues of CCD Astronomy from Sky Publishing Corp., http://skyandtelescope.com/
- Especially summer 1995 for the article Starting Out Right by Douglas George.
  - This is a must to read article for anyone starting in CCD imaging.

CCD Astroimaging Magazine Articles

- Amateur Telescope Making Journal, This magazine is not being published in any more.
- Issue #14, The "What Next" Crisis in CCD Imaging by Richard Berry
- Issue #13, Telescopes for CCD Imaging (Revisited) by Richard Berry
- Issue #12, Noise in CCD Cameras by Richard Berry
- Issue #11, CCD Imaging In Color by Richard Berry
- Issue #8, Imaging on a Mountaintop - Telescopes for CCD Imaging Part IV by Richard Berry
- Issue #7, Telescopes for CCD Imaging Part III by Richard Berry
- Issue #6, Telescopes for CCD Imaging Part II by Richard Berry
- Issue #5, Telescopes for CCD Imaging by Richard Berry
- 1999 5th Edition, From Darkroom to Digital
- 2002, September, Capture the Sky from Kitt Peak
- 2002, July, Over the Rainbow
- 2002, May, Catch an Extrasolar Planet
- 2002, March, Trichannel Astrophotography
- 2002, March, Imaging from the ‘Burgs
- 2002, February, Catching the Light Digitally Enhancing Your Astrophotos
- 2001, February, Sharpen Your Images
- 2001, January, Sensational Photography
- 2000, September, Spectacular Photography
- 2000, April, In Cyber Color
- 2000, March, How to Record the Digital Sky
- 2000, February, Capture the Sky on a CCD
1999 September, Adaptive Optics Meet CCDs
1998 April, CCD Cameras Get Savvy, ST-7 & ST-8
1997 February, In Search of Faint Galaxies
1996 December, Piece-by-Piece Astrophotography
1996 March, Beyond the Visible with CCDs
1995 September, Tune Up Your Telescope for CCD
1995 February, Catching Comets with a CCD
1994 September, Seeing & Believing (Don Parker)
1994 August, Working in the Digital Darkroom
1993 October, Over the Edge
1993 April, The Digital Darkroom, "Printing" the Image
1993 March, The Digital Darkroom, "Developing" the Image
1992 February, Celestial Seeing: Three Imaging Technologies
1991 August, Snapping the Planets Electronically

2003 November, A night with the Feras
2003 October, Simple telescope shooting
2003 September, Basic CCD techniques
2003 August, Imaging the Red Planet
2003 July, Simple skyshooting
2003 June, Imaging the Sun in Ha
2003 May, The STV: Video camera, CCD, or autoguider?
2003 March, Testing a CCD trio
2003 January, Join the Hunt (for extrasolar planets)
2002 March, Amateur Astronomical Spectroscopy
2000 March, At the Sharp end of Amateur Technology
1999 May, Recording an Eclipse on Video
1999 March, The Digital Age
1998 December, Finding the Position
1998 September, A CCD Overview
1998 June, CCD Sky: Supernova Patrol
1998 May, Ultimate Observing, Tom Puckett Observatory
1998 March, The Celestron Fastar SCT
1998 March, CCD Sky, General Tips
1998 January, Observations from Portugal, Pedro Re CCD setup
1997 December, CCD Sky: Processing Images
1997 November, An Eyepiece Camera - MX5
1997 September, CCD Sky: Finding Faint Objects
1997 June, CCDs - The Next Quantum Leap
1997 March, CCD Sky, Celestron Pixcel 255 Camera
1997 March, CD-ROM CCD Images
1996 December, Planetary Imager (Don Parker)
1996 September, CCD Time Machines
1996 June, Terry Platt Interview (inventor of the Starlight Xpress CCD cameras)
1995 October, From Camera and Film to CCD and Disk
1995 September, Stars in CCD Color
1995 June, By the Light of a Pixelled Moon
1995 April, Incredible Skies Captured by CCD

2000 September/October Astro-Imaging With a Commercial Digital Camera

2003 November, As the World Turns (Star Trails)
2003 September, Get Ultrasharp Planetary Images with Your CCD Camera
2003 August, Creating High-Resolution Color CCD Mosaics with Photoshop
2003 July, Getting Star and Nebula Colors Right in CCD Imaging
2003 June, Shooting the Planets with Webcams
• 2003 April, Guiding Techniques for Astrophotography
• 2003 March, The New Age of CCD Observing
• 2003 February, Scanning Deep-Sky Astrophotos
• 2003 February, Four Low-Cost Astronomical Video Cameras
• 2003 January, CCD Imaging with Hydrogen-Alpha Filters
• 2002 December, Shooting the Space Station with Video
• 2002 November, Planning an Astro-Imaging Expedition
• 2002 October, Deep-Sky Imaging with Digital Cameras
• 2002 September, Focusing a CCD Camera
• 2002 July, Measuring Double Stars with Video
• 2002 April, Improving Astrophotos with Photoshop’s Curves
• 2002 February, Wide-Field Imaging with CCD Cameras
• 2001 December, Thoughts on Super-Resolution Planetary Imaging
• 2001 November, Two Ultrasensitive CCD Cameras
• 2001 November, Imaging the Sky from the Suburbs
• 2001 October, A Trio for Minor-Planet Observers
• 2001 September, Fixing Vignetting in Astrophotos
• 2001 August, The Astrovid Color PlanetCam
• 2001 August, Astro Imaging with Digital Cameras
• 2001 July, High-Resolution Composite Color Imaging with Films
• 2001 July, Color CCD Imaging with Luminance Layering
• 2001 May, Automated Meter Observing
• 2001 January, Combining Exposures with Layer Masks
• 2001 January, STV: Digital Imaging for the Masses?
• 2000 December, Backyard Science: The IAPPP and the Amateur Astronomer
• 2000 November, Color Planetary Imaging for Beginners
• 2000 August, Automatic Asteroid Hunting
• 2000 July, Getting the Most from a CCD Spectrograph
• 2000 May, Backyard Spectroscopy
• 2000 February, A Place for Astro Imagers
• 2000 January, Thoughts of High-Resolution Imaging
• 1999 August, A First Look: SBIG’s Enhanced ST-7E CCD Camera
• 1999 August, Video of the Stars (Astrovid 2000)
• 1999 July, Under One Roof (MaxIm DL)
• 1999 June, Expanding the View
• 1999 May, Going to the Limit
• 1999 March, Warming Up to Digital Imaging
• 1999 March, Sentinel of the Sky
• 1999 February, Building a Fiber-Optic Spectrograph
• 1998 December, True-Color CCD Imaging
• 1998 November, Astrophotography with a Twist, Digital Image Processing
• 1998 November, Better Resolution Through Technology, SBIG AO-7
• 1998 July, Digital Desktop Darkroom
• 1998 June, QuickCam Astronomy
• 1998 May, Limiting Magnitudes for CCDs
• 1998 February, The Starlight Xpress MX5
• 1998 February, CCDs, Small Scopes, and the Urban Amateur
• 1997 December, Measuring the Sky with CCDs
• 1997 October, Visiting Grove Creek Observatory
• 1997 October, Test Report: Celestron’s PixCel 255 CCD Camera
• 1997 September, Test Report: Meade's Pictor 208XT and 216XT
• 1997 August, Test Report: Meade's Pictor 201XT Autoguider
• 1997 August, A CCD Camera Buzzword Primer
• 1997 July, Digitally Enhance Your Astrophotos
• 1997 June, Of Pixel Size and Focal Reducers
• 1997 May, A Do-It-Yourselfer's Primer for Digital Deep-Sky Imaging
• 1997 January, Amateurs and the CCD Revolution
• 1996 July, Test Report: SBIG’s ST-7 Camera
• 1995 August, Backyard Astronomy: Guiding for Sky Photography
• 1994 April, Image Processing in Astronomy
• 1993 April, An Astrophotographer’s Dream Home (Jack Newton)
• 1993 February, The Limiting Magnitude of a CCD Camera
• 1991 March, Test Report: An advanced CCD imaging camera for amateurs (Lynxx-PC Plus)
• 1990 October, Camcorder Assist for Planetary Observers
• 1990 September, Test Report: A Versatile CCD for Amateurs (ST-4)

• Sky & Space Magazine, Australia Magazine +61 2 9369 3344
• 1997 June, Technical Tips - LunaCam I and II
• 1997 February, Test Report: SBIG ST-7 by Ted Dobosz

  • Telescopes & Camcorder, A Match Made in Heaven
• 1998 June, Off-The –Shelf Software Provides Astronomy Researchers with Deblurred Images
• Back issues of Observatory Techniques Magazine, (605) 226-1078, Email: otm@midco.net. This magazine is not being published in any more. Issues 1 - 23 were published and had information on CCD imaging.

CCD Astroimaging Conferences and Organizations

• AstroImage conferences by the Orange County Astronomers, http://www.chapman.edu/oca/special.html
• Transitsearch.org, discovering transit planets orbiting stars, http://www.transitsearch.org/index.htm
• Center for Backyard Astrophysics, http://cba.phys.columbia.edu/

CCD Astroimaging Web Articles

• Astronomy magazine articles online, http://www.astronomy.com look under Features, Hobby, Photographing the Sky
• Apogee CCD University, http://www.ccd.com/ccdu.html
• Image Processing in Astronomy Education http://www.phy.duke.edu/~kolena/talks/aapt99.html
  • A talk presented at the January 1999 meeting of the American Association of Physics Teachers Anaheim, CA
• PixelVision http://www.pv-inc.com/tutorial/tutorial.htm
  • How CCDs Challenge Your Telescope, Refractor or Reflector, Tune Up Your Drive, etc.
• Sky Publishing Corp. CCD Astronomy articles are online at http://skyandtelescope.com/howto/imaging/
• U. of Virginia
  • History of Photometry in Astronomical Observations http://www.astro.virginia.edu/~afs5z/photometry.html
  • Virtual Museum of Measuring Engines http://www.astro.virginia.edu/~afs5z/engines.html

CCD Astroimaging Computer CD-ROMs

  • Includes FOSTER CCD Imaging electronic book.
  • Before and after processed images
  • SkyPro CCD astronomy software demo (V2.04) with over 1,000 sample images taken with a wide range of optical instruments.
• The Ultimate CCD Collection, Images by Jack Newton & Don Parker
  • SkyPro CCD astronomy software demo (V2.04) with over 300 color images.
  • Images are provided in 24-bit TIFF, JPEG and 8-bit bitmap files.
  • http://www.bisque.com/
• Deep Sky Imaging Using a CCD, Pedro Re, Kunihiko Okano, Dennis Luse, Rik Blondeel, Michael Purcell, William McLaughlin and Luc Vanhoeck, http://www.astroid.com/CCDBOOKS.HTM

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CCD Astroimaging Astronomer's Web Sites

- Bartels, Mel http://www.efn.org/~mbartels/
- Berry, Richard http://www.wvi.com/~rberry/
  - Author of many books, articles & software programs.
  - Co-author of *The Handbook of Astronomical Image Processing*
  - Cookbook CB245 camera information & images
- Boltwood, Paul http://ottawa.rasc.ca/pictures/pboltwood/pboltwood.html
  - Meade LX200 and 416XT techniques and images
- Burnell, James http://www.jburnell.com/
  - Co-author of *The Handbook of Astronomical Image Processing*
  - HX916, Cookbook CB245 camera images, AIP4WIN imaging processing software
- Carrico, Tom http://www.ccdcargo.com/
  - SBIG ST-10ME and ST-7E camera images
- Catterall, Adrian Modern Observatory http://www.observatory.demon.co.uk/
  - Hale Eac512, SBIG ST10XME & ST-8E camera images
- Cidadao, Antonio http://www.astrosurf.com/cidadao/
  - Lunar & planetary CCD imaging
- Cole, Michael The Urban Imager http://home.earthlink.net/~urbanimager
  - SBIG ST10XE & ST-7 camera images
- Cook, Lew CCD Photometry http://www.geocities.com/lcoo/
- Denny, Bob http://dc3.com/
  - ACP Observatory Control Software, PinPoint Astrometric Engine, Astronomer’s Control Panel (ACP1)
- Forsberg, Andy http://pages.prodigy.net/cs-imaging/
- Girard, Jim http://mywebpages.comcast.net/argojg/index.htm
  - SBIG ST-7 camera images
  - RGB Weight Calculator for CCD Astrophotography
- Graham, Glenn Imaging Web Page, http://home1.gte.net/res0jwg1/astronomy
  - SBIG STV, Meade Pictor 216xt & webcam images
- Haworth, David http://www.stargazing.net/david/
  - Fastar SBIG ST-237, Nikon Coolpix 990, ToUcam & Cookbook CB245 camera images
- Hoot, John http://www.chapman.edu/oca/ai99/hoot.htm
  - 1999 AstroImage’99 talk on acquiring time-lapse CCD images and creating animated GIFs
- Johnson, Wayne http://www.chapman.edu/oca/benet/mrgalaxy.htm
  - Web site devoted to Supernova searching, which features a number of CCD images of galaxies and SNe.
- Kelly, Al http://www.ghg.net/akelly
  - Cookbook CB245 camera images
- Kenyon, Dave http://my.starstream.net/davekenyon/kaotk/
  - SBIG ST-7 camera images and CCD articles
- Krajci, Tom http://members.3lefties.com/krajcit/
  - Photometry, bias frame analysis & images
- Lodriguss, Jerry http://www.astropix.com/INDEX.HTM
  - Film images and digital imaging techniques articles
- Luse, Dennis http://www.stargazing.net/david/DennisLuse/index.htm
  - SBIG ST-7 camera images & tips for imaging with the LX200-ST7
- MacQuarrie, Jeff http://members.aol.com/tchphysics/index.htm
  - Cookbook CB245 camera images
- Mais, Dale http://members.cts.com/cafe/m/mais/
  - Spectroscopy, ST-8
- McLaughlin, William http://willmclaughlin.astrodigitals.com/
  - Author of the *Astronomy Magazine* article *In Search of Faint Galaxies*.
  - Many types of CCD cameras, images & imaging articles
  - Astrophotography
- Okano, Kunihiko http://www.asahi-net.or.jp/~rt6k-okn
• SBIG ST-7E camera images, DDP image processing techniques and images
• Polakis, Tom http://www.psiaz.com/polakis/
• SBIG ST-7 camera images & articles
• Puckett, Tim http://www.cometwatch.com
• Apogee AP7 camera images
• Stephens Robert http://home.earthlink.net/~rdstephens/default.htm
• SBIG ST-7 camera images
• Trimarchi, Eddie, FITS Plugin for Photoshop http://astroshed.com/
• Tucker, Roy http://gpoobs.home.mindspring.com/gpoobs.htm
• Moving Object and Transient Event Search System (MOTESS)
• Vanhoeck, Luc http://ourworld.compuserve.com/homepages/Luc_Vanhoeck/
• SBIG ST-8 camera images
• Vaughn, Chuck http://www.aa6g.org/astro.html
• Astrophotography
• Wallis, Brad http://www.frazmtn.com/~bwallis
• SBIG ST-7 camera images
• Webber, Larry, FocusMax http://users.bsdwebsolutions.com/~larryweber/
• Weichel, Steen http://home.worldonline.dk/~jsrsw/index.htm
• Comparison of the general properties of CCD-cameras for astronomical use & Cookbook CB245 camera images
• West, Rob http://members.aol.com/wmti/ccd.html
• Cookbook CB245 camera images
• Wodaski, Ron http://www.newastro.com/wodaski/
• Many CDD cameras, many articles, reviews & images
• Zerbe, Craig High Resolution Video Imaging http://www.astroimaging.com/

**CCD Astroimaging Images on the Web (Also check Astroimaging Astronomer’s Web Sites above)**

• CCD Images of Messier Objects, http://zebu.uoregon.edu/messier.html
  • ST-4, ST-5, ST-6B and ST-8E images

**CCD Observing**

• New Mexico Skies Guest Observatory, http://www.nmskies.com
• Nightly and Advanced Observing Program at Kitt Peak, the National Optical Astronomy Observatory (NOAO)
  • http://www.noao.edu/outreach/aop
• Observatory, Bed & breakfast, Jack Newton, http://www.jacknewton.com
  • AZ & Osoyoos, BC, Canada

**CCD Astroimaging Email List Servers**

• Yahoo! Groups Top>Science>Astronomy has many groups on CCD cameras & image processing software
  • http://dir.groups.yahoo.com/dir/Science/Astronomy
• CCD list send “subscribe ccd” to Majordomo@listserv.wwa.com

**CCD Astroimaging Video Tapes**

• Image Processing in Astronomy and other CCD videos, STV Press & Video, Tom Cleveland (800) 493-3005
  • http://www.thinkvideo.com/astronomy.html
  • Try to obtain the ST-4 tape if you are just starting to use the ST-4.
Webcam

- Yahoo Groups QuickCam and Unconventional Imaging Astronomy Group, http://groups.yahoo.com/group/QCUIAG
- Yahoo Groups ToUcam Group, http://groups.yahoo.com/group/ToUcam/
- Haworth, David, Philips PCVC740K ToUcam PRO PC Video Camera
  http://www.stargazing.net/david/toucam/index.html
- QuickCam Vesta Pro Camera, http://members.tripod.com/rjemtd/Astronomy.htm

Astroimaging with Standard Digital Cameras

- Digital camera T-mount adapters are available from DigitalAstronomy.com, http://www.digitalastronomy.com/, CKC
- Bryan, http://webpages.charter.net/bbiggers/DCExperiments/index.html, has an extensive web site on digital cameras.
- Cannon, Denny, http://home.hiwaay.net/~drcannon/cp950/, has lots of information on the Coolpix 950. He describes
  making a homemade C-8 mount bracket to hold the Coolpix 950 and making a cable release bracket for the Coolpix 950.
  His Mars, Venus, Moon, Jupiter, Orion, M13, M57, M11, M22, etc. images were taken with a Celestron SP C-8 with
  Coolpix 950.
- Haworth, David, http://www.stargazing.net/david/Nikon990/index.html, images of the Sun and Moon with a Nikon
  Coolpix 990 and Orion ShortTube 80mm Refractor.
- Hergert, Don, http://home.att.net/~dhergert/astro950.html, describes astrophotography with the Coolpix 950 using a
  Tasco 900mm/4.5” 450x reflector telescope. He describes building an eyepiece/adapter for the Coolpix 950. His images
  include Jupiter, Moon, Saturn and the Sun.
- Lonestardigital.com, http://www.lonestardigital.com/coolpix950.htm, Online Digital Photography Magazine, has lots of
  information on the Coolpix 950 and 990 and includes a Moon image with Coolpix 950 using a CKC Power Spotting
  Scope.
- McKee, Bret, http://www.imaging-resource.com/ARTS/ASTRO/ASTRO.HTM, has a nice one-web page overview article on
  Digital Camera Astrophotography.
- Salzgeber, Philipp, http://www.salzgeber.at/astro/moon/aristarchus2.html, has a Moon image taken with 5.1” Newton
  telescope with a Coolpix 950 digital camera.

List of Astronomy Lists

- Brad Wallis and Robert Provin  ASTRO IMAGING LINKS PAGE  http://voltaire.csun.edu/links.html