

# CCD Astroimaging Information

From Observational Astronomy Web Site by David Haworth  
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## 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
- *The Art and Science of CCD Astronomy*, David Ratlidge, 162 pages, <http://www.astrovid.com/CCDBOOKS.HTM>
  - 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*, 2<sup>nd</sup> 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.
  - <http://www.willbell.com/ccd/ccd4.htm> or <http://www.astrovid.com/CCDBOOKS.HTM>
- *The CCD Camera Cookbook*, Richard Berry, Veikko Kanto & John Munger, 176 pages
  - This book shows you how to build your own CCD camera.
  - <http://www.willbell.com/ccd/ccd5.htm>
- *Choosing and Using a CCD Camera*, Richard Berry, 96 pages
  - Book includes Quikpix software for PCs
  - <http://www.willbell.com/ccd/ccd6.htm>
- *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
- *FOSTER CCD Imaging Series*, Software Bisque, 107 pages, <http://www.bisque.com/>
  - 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)*
  - Willmann-Bell, Inc. <http://www.willbell.com/aip/index.htm>
- *Handbook of CCD Astronomy*, Steve B. Howell, 164 pages, Cambridge University Press
  - 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
  - <http://www.willbell.com/ccd/ccd7.htm>
- *The New CCD Astronomy*, Ron Wodaski, 476 pages
  - A very good book to start learning about CCD astronomy
  - <http://www.newastro.com/newastro/default.asp>
- *Splendors of the Universe: A Practical Guide to Photographing the Night Sky*, Terence 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
  - Sky Publishing Corp., <http://skyandtelescope.com/>

## Book Stores

- Large astronomy book vendor: Willmann-Bell, Inc. <http://www.willbell.com/ccd/index.htm>
- Amazon.com book store online search, <http://www.amazon.com/>
- Powells a local Portland book store with online search, <http://www.powells.com/>

## Commercial CCD & Video Cameras for Astroimaging

Company	URL	Cameras	Notes
Adirondack Video Astronomy	<a href="http://www.astrovid.com/">http://www.astrovid.com/</a>	Starlight Xpress, Astrovid 2000, Neptune 100, Planetcam, Color Pro, Color Pro C	Video cameras
Apogee Instruments	<a href="http://www.ccd.com/">http://www.ccd.com/</a>	AP Series	CCD cameras
Finger Lakes Instrumentation	<a href="http://www.fli-cam.com/">http://www.fli-cam.com/</a>	MaxCam, IMG Series	CCD cameras
Meade Instruments	<a href="http://www.meade.com/">http://www.meade.com/</a>	Pictor Series: 201XT, 208XT, 216XT, 416XTE, 1616XTE	CCD cameras
Santa Barbara Instrument Group (SBIG)	<a href="http://www.sbig.com">http://www.sbig.com</a>	STV, ST237A, ST5C, ST7E, ST8E, ST9, ST10	CCD & video rate cameras

## Imaging Processing & Control Software for Astroimaging

Software	Source	URL	Notes
245Plus & 211Plus	Willmann-Bell, Inc	<a href="http://www.willbell.com/ccd/camcookupg.htm">http://www.willbell.com/ccd/camcookupg.htm</a>	Image processing & control for Cookbook
AIP245	Willmann-Bell, Inc	<a href="http://www.willbell.com/ccd/ccd7.htm">http://www.willbell.com/ccd/ccd7.htm</a>	Image processing + book
AIP4WIN	Willmann-Bell, Inc	<a href="http://www.willbell.com/aip/index.htm">http://www.willbell.com/aip/index.htm</a>	Image processing + book
AstroAlign	Carsten Arnholm	<a href="http://home.online.no/~arnholm/astro/software/astroalign/AstroAlign.htm">http://home.online.no/~arnholm/astro/software/astroalign/AstroAlign.htm</a>	Image processing
Astroart 3.0	MSB Software	<a href="http://www.msb-astroart.com/">http://www.msb-astroart.com/</a>	Image processing & camera control
AstroPIX: CB245, Multi245 & Qcolor	Richard Berry	<a href="http://www.wvi.com/~rberry/astropix/astropix.htm">http://www.wvi.com/~rberry/astropix/astropix.htm</a>	Image processing for the Cookbook CCD cameras
AstroStack 2.1.1	Robert J. Stekelenburg	<a href="http://www.astrostack.com/">http://www.astrostack.com/</a>	Stacking images
AVI2BMP		<a href="http://avi2bmp.free.fr/telechar.htm">http://avi2bmp.free.fr/telechar.htm</a>	Stacking images
AVIDark		<a href="http://www.geocities.com/jgroveuk/AVIDark.html">http://www.geocities.com/jgroveuk/AVIDark.html</a>	AVI image pre-processing program
CCDSOFT 5.00.077	Software Bisque	<a href="http://www.bisque.com/">http://www.bisque.com/</a>	Image processing & camera control
ImagesPlus 1.71	MLUnsold Digital Imaging	<a href="http://www.mlunsold.com">http://www.mlunsold.com</a>	Image processing
iMerge		<a href="http://www.geocities.com/jgroveuk/iMerge.html">http://www.geocities.com/jgroveuk/iMerge.html</a>	Image-stacking and Mosaic
IRAF 2.12.1	IRAF Programming Group & NOAO	<a href="http://iraf.noao.edu/">http://iraf.noao.edu/</a>	Free image processing for UNIX & LINUX
IRIS 3.83b	BT-Atlas - Christian Buil	<a href="http://www.astrosurf.com/buil/us/iris/iris.htm">http://www.astrosurf.com/buil/us/iris/iris.htm</a>	Free image processing & camera control
K3CCD Tools	Peter Katreniak	<a href="http://www.pk3.org/Astro">http://www.pk3.org/Astro</a>	Camera control, stacking & image processing
Local Adaptive Unsharp Masking (LAUM) 2.0.0.65	Balthasar Indermuelhe	<a href="http://www.inside.net/plugin">http://www.inside.net/plugin</a> <a href="http://www.inside.net/plugin/laum.htm">http://www.inside.net/plugin/laum.htm</a>	Plugin for MIRA, Paint Shop Pro & Photoshop
MaxIm DL 3.21	Diffraction Limited	<a href="http://www.cyanogen.com">http://www.cyanogen.com</a>	Image processing & camera control
MIRA Pro & MIRA AP 7	Axiom Research	<a href="http://www.axres.com/">http://www.axres.com/</a>	Image processing & camera control
QMIPS32 1.81	Christian Buil	<a href="http://www.astrosurf.com/qm32/">http://www.astrosurf.com/qm32/</a>	Image processing
Sigma	Ray Gralak	<a href="http://www.gralak.com/Sigma/">http://www.gralak.com/Sigma/</a>	Image combining
SigmaReject	Russell Croman	<a href="http://www.rc-astro.com/resources/sigma_reject.html">http://www.rc-astro.com/resources/sigma_reject.html</a>	Image combining plugin
StellaImage3 & 4	AstroArts	<a href="http://www.astroarts.co.jp/index.html">http://www.astroarts.co.jp/index.html</a>	Image processing
RegiStar	Auriga Imaging	<a href="http://aurigaimaging.com">http://aurigaimaging.com</a>	Registration software
Registax 2.1.1	Cor Berrevoets	<a href="http://aberrator.astronomy.net/registax/">http://aberrator.astronomy.net/registax/</a>	Registration software
PictorView	Meade Instruments	<a href="http://www.meade.com/">http://www.meade.com/</a>	Image processing & Pictor camera control

SuperFix & MegaFix	Bruce Johnston Computing	<a href="http://members.aol.com/BJohns7764/">http://members.aol.com/BJohns7764/</a>	Image processing
Win245	Intricate Micro Systems	<a href="http://www.intricate-ms.com/">http://www.intricate-ms.com/</a>	Cookbook CB245 control

### Photo Editing Software Commonly Used for Astroimaging

Software	Source	URL	Notes
IrfanView	Irfan Skiljan	<a href="http://irfanview.tuwien.ac.at/">http://irfanview.tuwien.ac.at/</a>	Graphics program (free)
Paint Shop Pro 8.1	JASC	<a href="http://www.jasc.com">http://www.jasc.com</a>	Graphics program
Photoshop 7.0.1	Adobe	<a href="http://www.adobe.com">http://www.adobe.com</a>	High end graphics program
Picture Window 3.5	Digital Light & Color	<a href="http://www.dl-c.com">http://www.dl-c.com</a>	Full 16 bit editing, many application notes on web site

### Build Your Own CCD Camera for Astroimaging

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

### CCD Astroimaging Accessories

- Murnaghan Instruments, [http://www.e-scopes.cc/Murnaghan\\_Instruments\\_Corp56469.html](http://www.e-scopes.cc/Murnaghan_Instruments_Corp56469.html)
  - 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
- Scientific Imaging Technologies, Inc. <http://www.site-inc.com>
  - 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
- *Astronomy Explore the Universe Magazine*, <http://www.astronomy.com>
  - 1999 5<sup>th</sup> Edition, From Darkroom to Digital
- *Astronomy Magazine*, <http://www.astronomy.com>
  - 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, Sunsational Photography
  - 2000, September, Exploring the Digital Darkroom
  - 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
- 1996 Observer's Guide, Shooting the Sky With an Electronic Camera
- 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
- *Astronomy Now* Magazine, <http://www.astronomynow.com/>
  - 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
- *Sky News* Magazine, <http://www.skynewsmagazine.com>
  - 2000 September/October Astro-Imaging With a Commercial Digital Camera
- *Sky & Telescope* Magazine, <http://skyandtelescope.com/>
  - 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
- *Skywatch 2001 Magazine*, <http://skyandtelescope.com/>
  - Telescopes & Camcorder, A Match Made in Heaven
- *Vision Systems Design Magazine*, <http://www.vision-systems-design.com>
  - 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](mailto: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

- Imaging the Sky conferences, <http://mywebpages.comcast.net/argojg/its/its2003.html>
- AstroImage conferences by the Orange County Astronomers, <http://www.chapman.edu/oca/special.html>
- Society for Astronomical Sciences symposiums, <http://www.iappwest.org/>
- Transitsearch.org, discovering transit planets orbiting stars, <http://www.transitsearch.org/index.htm>
- AAVSO: American Association of Variable Star Observers, <http://www.aavso.org/>
- 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>
- Richard Berry, <http://www.wvi.com/~rberry/cookbook/cookbook.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/>
- Evolving Towards The Perfect CCD, U. of Oregon, <http://zebu.uoregon.edu/ccd.html>
- U. of Virginia
  - History of Photometry in Astronomical Observations <http://www.astro.virginia.edu/~afs5z/photometry.html>
  - History of Photography in Astronomical Measurements <http://www.astro.virginia.edu/~afs5z/photography.html>
  - Virtual Museum of Measuring Engines <http://www.astro.virginia.edu/~afs5z/engines.html>

### CCD Astroimaging Computer CD-ROMs

- *CCD Imaging CD-ROM*, Software Bisque, <http://www.bisque.com/>
  - 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.astrovid.com/CCDBOOKS.HTM>

## 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>
- Brewster, Jon <http://astro.brewsters.net>
  - 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.ccdargo.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
- Goldman, Don <http://www.astrodon.com/index.html>
  - 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/kao/>
  - 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
- Mobile Astronomical Society <http://hometown.aol.com/RMOLLISE/index.html>
  - Astrovideography
- 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.psiiaz.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://gpobs.home.mindspring.com/gpobs.htm>
  - Moving Object and Transient Event Search System (MOTESS)
- Vanhoeck, Luc [http://ourworld.compuserve.com/homepages/Luc\\_Vanhoeck/](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)**

- Cookbook CCD Camera Image Gallery, <http://www.wvi.com/~rberry/cookbook/cookbook.htm>
- CCD Images of Messier Objects, <http://zebu.uoregon.edu/messier.html>
- SBIG CCD Image Gallery, <http://www.sbig.com/sbwhtmls/gallery.htm>
- Software Bisque Images, <http://www.bisque.com/CoolStuff/coolstuff.asp>
- Grove Creek Observatory, <http://www.gco.org.au/images.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](mailto: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>
- 1996 Santa Barbara Instrument Group CCD Imaging Conference video tapes <http://www.sbig.com>
  - 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>
- SAC CCD Imaging Systems, <http://www.sac-imaging.com/>
- Cidado, Antonio, Logitech grayscale QuickCam <http://www.astrosurf.com/cidado/quickcam.htm>
- 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 Power, <http://www.ckcpower.com/> and Scopetronix <http://www.scopetronix.com/>.
- Bryan, <http://webpages.charter.net/bbiggers/DCEperiments/index.html>, has an extensive web site on digital cameras.
- Buil, Christian, <http://www.astrosurf.com/buil/us/test5/cp9901.htm>, review of Nikon Coolpix 990 in French.
- 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/adaptor for the Coolpix 950. His images include Jupiter, Moon, Saturn and the Sun.
- Konkel, Greg , <http://www.nwgis.com/greg/equip.htm> using an Olympus C-2020 Z Digital Camera
- 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>
- Mel Bartels's list of links, <http://www.efn.org/~mbartels/aa/aa.html>
- More Info on CCDs and Astronomical Image Processing <http://www.phy.duke.edu/~kolena/talks/moreinfo.html>
- OPTEC's list of links. <http://www.optecinc.com/astronomy/links.html>
- *Sky & Telescope* Magazine Astronomy Web Sites, [http://skyandtelescope.com/resources/internet/article\\_330\\_1.asp](http://skyandtelescope.com/resources/internet/article_330_1.asp)