

CCD Astroimaging Information

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

Websites Referred to in David Haworth's ITS 2005 Presentation

- *Astrophotography Articles*, Jerry Lodriguss
 - http://www.astropix.com/HTML/I_ASTROP/TOC_AP.HTM
- *Comparative Test Canon 10D/Nikon D70*, Christian Buil
 - <http://astrosurf.com/buil/d70v10d/eval.htm>
- *Canon Astronomy version EOS 20Da*
 - <http://www.canon.co.jp/Imaging/eos20da/index.html>
- *Canon Astrophotography*
 - <http://web.canon.jp/Imaging/astro/index-e.html>
- *Deep-space Imaging with the Canon EOS 20Da*
 - <http://www.lrgb.com/20da.html>
- *Spectral Response of DSLR Cameras*, Dennis diCicco
 - <http://www.pbase.com/terrylovejoy/image/29755088>

2005 Astroimaging Books

- *Digital Astrophotography, The State of the Art*, David Ratledge
 - Chapters by different authors, available in the fall
 - <http://www.deep-sky.co.uk/pubs.htm>
- *Introduction to Digital Astrophotography*, Robert Reeves
 - Available now, 412 pages
 - Willmann-Bell, Inc. <http://www.willbell.com>
- *The Handbook of Astronomical Image Processing 2nd edition*, Richard Berry & James Burnell
 - Available this summer, 712 pages
 - Includes *Astronomical Image Processing for Windows (AIP4WIN) V2.0*
 - Willmann-Bell, Inc. <http://www.willbell.com>

2005 Astroimaging Magazine Articles

- *Astronomy Magazine*, <http://www.astronomy.com>
 - 2005 August, Image like a pro
 - 2005 June, Easy imaging for everyone
 - 2005 May, Small eyes on the sky
 - 2005 April, Sharper photos with film
- *Sky News Magazine*, <http://www.skynewsmagazine.com>
 - 2005 May/June, The DSLR Revolution in Astrophotography
 - 2005 March/April, Digital SLR Cameras: A Revolution in Astrophotography
- *Sky & Telescope Magazine*, <http://skyandtelescope.com/>
 - 2005 August, Narrowband Imaging in Color
 - 2005 July, Capturing the Colors of the Moon
 - 2005 June, AVA's Atmospheric Dispersion Corrector
 - 2005 May, Hybrid Composite Imaging
 - 2005 April, I Pursuit of the Ultimate Image
 - 2005 March, Resurrecting an Old Astrophoto
 - 2005 January, A New Way of Looking at the Moon

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.
- *The Art and Science of CCD Astronomy*, David Ratlidge,
 - Chapters by different authors about their imaging 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.
 - <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, Terence 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/>

Imaging Processing & Control Software for Astroimaging			
Software	Source	URL	Notes
245Plus & 211Plus	Willmann-Bell, Inc	http://www.willbell.com/ccd/camcookupg.htm	Image processing & control for Cookbook
AIP245	Willmann-Bell, Inc	http://www.willbell.com/ccd/ccd7.htm	Image processing + book
AIP4WIN	Willmann-Bell, Inc	http://www.willbell.com/aip/index.htm	Image processing + book
AstroAlign	Carsten Arnholm	http://home.online.no/~arnholm/astro/software/astroalign/AstroAlign.htm	Image processing
Astroart 3.0	MSB Software	http://www.msb-astroart.com/	Image processing & camera control
AstroPIX: CB245, Multi245 & Qcolor	Richard Berry	http://www.wvi.com/~rberry/astropix/astropix.htm	Image processing for the Cookbook CCD cameras
AstroStack 2.1.1	Robert J. Stekelenburg	http://www.astrostack.com/	Stacking images
AVI2BMP		http://avi2bmp.free.fr/telechar.htm	Stacking images
AVIDark		http://www.geocities.com/jgroveuk/AVIDark.html	AVI image pre-processing program
CCDSOFT 5.00.077	Software Bisque	http://www.bisque.com/	Image processing & camera control
ImagesPlus 1.71	MLUnsold Digital Imaging	http://www.mlunsold.com	Image processing
iMerge		http://www.geocities.com/jgroveuk/iMerge.html	Image-stacking and Mosaic
IRAF 2.12.1	IRAF Programming Group & NOAO	http://iraf.noao.edu/	Free image processing for UNIX & LINUX
IRIS 3.83b	BT-Atlas - Christian Buil	http://www.astrosurf.com/buil/us/iris/iris.htm	Free image processing & camera control
K3CCD Tools	Peter Katreniak	http://www.pk3.org/Astro	Camera control, stacking & image processing
Local Adaptive Unsharp Masking (LAUM) 2.0.0.65	Balthasar Indermuelhe	http://www.inside.net/plugin http://www.inside.net/plugin/laum.htm	Plugin for MIRA, Paint Shop Pro & Photoshop
MaxIm DL 3.21	Diffraction Limited	http://www.cyanogen.com	Image processing & camera control
MIRA Pro & MIRA AP 7	Axiom Research	http://www.axres.com/	Image processing & camera control
QMIPS32 1.81	Christian Buil	http://www.astrosurf.com/qm32/	Image processing
Sigma	Ray Gralak	http://www.gralak.com/Sigma/	Image combining
SigmaReject	Russell Croman	http://www.rc-astro.com/resources/sigma_reject.html	Image combining plugin
StellaImage3 & 4	AstroArts	http://www.astroarts.co.jp/index.html	Image processing
RegiStar	Auriga Imaging	http://aurigaimaging.com	Registration software
Registax 2.1.1	Cor Berrevoets	http://aberrator.astronomy.net/registax/	Registration software
PictorView	Meade Instruments	http://www.meade.com/	Image processing & Pictor camera control
SuperFix & MegaFix	Bruce Johnston Computing	http://members.aol.com/BJohns7764/	Image processing
Win245	Intricate Micro Systems	http://www.intricate-ms.com/	Cookbook CB245 control

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

Commercial CCD & Video Cameras for Astroimaging			
Company	URL	Cameras	Notes
Adirondack Video Astronomy	http://www.astrovid.com/	Starlight Xpress, Astrovid 2000, Neptune 100, Planetcam, Color Pro, Color Pro C	Video cameras
Apogee Instruments	http://www.ccd.com/	AP Series	CCD cameras
Finger Lakes Instrumentation	http://www.fli-cam.com/	MaxCam, IMG Series	CCD cameras
Meade Inst4ruments	http://www.meade.com/	Pictor Series: 201XT, 208XT, 216XT, 416XTE, 1616XTE	CCD cameras
Santa Barbara Instrument Group (SBIG)	http://www.sbig.com	STV, ST237A, ST5C, ST7E, ST8E, ST9, ST10	CCD & video rate cameras

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

Astroimaging Accessories

- Murnaghan Instruments, 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.

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 5th Edition, From Darkroom to Digital
- *Astronomy* Magazine, <http://www.astronomy.com>
 - 2005 August, Image like a pro

- 2005 June, Easy imaging for everyone
- 2005 May, Small eyes on the sky
- 2005 April, Sharper photos with film
- 2004 September, Shooting the sky
- 2004 September, Cannon 10D digital camera
- 2004 August, Extreme imaging
- 2004 June, Amateur CCD discoveries
- 2004 May, All-sky fireball network
- 2004 April, When Astrophotos go bad
- 2004 March, Capturing aurorae
- 2004 February, The 25 greatest Astrophotos in history
- 2004 February, CCD Images at their best
- 2003 December, Imaging with webcams
- 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 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/>
 - 2005 April, Digital Drawing
 - 2004 February, CCD Cameras
 - 2004 February, The world of CCDs
 - 2004 February, Planetary imaging with webcams
 - 2004 February, Amateurs on the cutting edge
 - 2004 January, Putting the art into astrophotography
 - 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
- *Beginner's Guide to Astronomy* by Astronomy Magazine, <http://www.astronomy.com>
 - 2003 Silver halide and electronic chips: imaging the cosmos
- *Sky News Magazine*, <http://www.skynewsmagazine.com>
 - 2005 May/June, The DSLR Revolution in Astrophotography
 - 2005 March/April, Digital SLR Cameras: A Revolution in Astrophotography
 - 2004 March/April, The Acuter Digital Imager
 - 2000 September/October, Astro-Imaging With a Commercial Digital Camera
- *Sky & Telescope Magazine*, <http://skyandtelescope.com/>
 - 2005 August, Narrowband Imaging in Color
 - 2005 July, Capturing the Colors of the Moon
 - 2005 June, AVA's Atmospheric Dispersion Corrector
 - 2005 May, Hybrid Composite Imaging
 - 2005 April, I Pursuit of the Ultimate Image
 - 2005 March, Resurrecting an Old Astrophoto
 - 2005 January, A New Way of Looking at the Moon
 - 2004 October, Stella Cam: II Taking Video into the Deep Sky
 - 2004 October, How to Capture October's Lunar Eclipse
 - 2004 September, SLR Camera Adapters
 - 2004 September, Lunar Mosaics Made Easy
 - 2004 July, Channel-Surfing to Better Solar Images
 - 2004 July, King of the Chips: SBIG's STL-11000M
 - 2004 June, Astro Imaging with Digital SLR Cameras
 - 2004 May, Photographing the Transit of Venus
 - 2004 April, Processing Webcam Images with RegiStax
 - 2004 March, Capturing Star Trails with a Digital Camera
 - 2004 January, Deep-Sky Imaging with Webcams
 - 2003 December, Deep-Sky Imaging with Integrating Video Cameras
 - 2003 December, Akira Inaka's 3-D Universe
 - 2003 December, The New Face of Planetary Astronomy
 - 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. 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

- AAVSO CCD Observing Manual, <http://www.aavso.org/ccd/manual/>
- *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 Images on the Web (Also check Astroimaging Astronomer's Web Sites below)

- 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 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 (ACPI)
- 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.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://gpobs.home.mindspring.com/gpobs.htm>

- Moving Object and Transient Event Search System (MOTESS)
- Vanhoeff, Luc http://ourworld.compuserve.com/homepages/Luc_Vanhoeff/
 - 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 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 Vanhoeff, <http://www.astrovid.com/CCDBOOKS.HTM>

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.wva.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/>
- Cidadao, Antonio, Logitech grayscale QuickCam <http://www.astrosurf.com/cidadao/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/DCExperiments/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.
- Konkell, 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