

# MPO Suite

## V10

# Installation

# Guide

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↳ As of 2010 March 28, the UCAC2 catalog is no longer included with MPO software. The UCAC2 catalog, in its original format, is still supported.

## License Agreement

The License Agreement is straightforward. Be honest and may your skies be clear. Cheat and may cloudy skies haunt you forever.

You may make a backup set of the DVDs for archive purposes.

If a single license, you may install the programs such that one and only one user can use the software at any given time. Consider the software like a physical book: only one person can read it at a time. For the

single license, it is permissible to install the software one more than one machine, providing – again – that one and only one person is using the sum total of copies.

Installation on a network server for access by multiple simultaneous users is not allowed. Installation on a server is allowed only if one and only one user is allowed access to the software at any one time.

If a multiple license (educational), the program can be installed as if you have five (5) DVDs though you use the single DVD for installation. The rules for each installation are the same as for a single license agreement.

If you sell or otherwise dispose of the computer(s) on which the software is installed, you must either remove the software entirely beforehand or transfer complete ownership to the new owner, this includes the original and archive DVDs and any documentation. In the case of a multi-user license, you must decrement the number of allowed installations by the number of computers of which you disposed and carry the MPO software.

## System Requirements

### Screen and Color Settings

All MPO programs are optimized for screen resolutions of *at least* 800x576 at 256 colors and *using the Small Fonts settings. Higher screen and color resolutions will enhance use of the programs.* Using Large Fonts at 800x576 will make some windows larger than the screen can display. If at all possible, use at least a 1024x768x64K setting when running the MPO suite of programs. This allows the best display of 16-bit CCD images. The programs run under Microsoft Windows 98 through Vista (32-bit) and Windows 7 (64-bit). MPO Connections requires that hardware manufactures have 64-bit drivers available. The MPO installation program runs the Apogee, FLI, and SBIG driver installation programs that do support 32 or 64-bit.

### Recommended minimum system:

Pentium IV or equivalent @ 1.5GHz or higher  
Microsoft Windows NT2000/XP/VISTA/Win7  
1024x786x64K or higher screen resolution  
DVD  
1GB RAM

## Disc Space Requirements

The hard drive space requirements depend on which programs and catalogs you install.

The core programs and supporting files (if all are installed) require approximately 70 MB.

The documentation files, not including help (CHM) files, require approximately 17 MB.

The common data files require approximately 180 MB. These are installed even if only one program is installed.

The MPO Asteroid Viewing Guide has a set of files unique to its operation that are installed only if it is installed. These files require about 200 MB. This is a minimum since the oppositions file included data for only the first 25000 numbered asteroids. The Viewing Guide will add to this file when you generate data for objects not already in the list. If you were to generate data for all the asteroids in the MPCORB file as of 2010 March 28, the total space requirement for the MPO AVG files rises to approximately 1.2GB

The UCAC3 catalog requires approximately 8.1 GB

The MPOSC3 catalog requires approximately 2.5 GB  
The Henden Charts require approximately 17 MB  
The example images require approximately 400 MB.  
The Photometry Workshop requires approximately 160 MB.

↳ As of 2010 March 28, the Henden Charts (and Photometry Workshop) files are not embedded within the SETUP.EXE file. Therefore, you can run or copy them directly from the MPO Setup/MPOSC3 DVD.

## Technical Support

Mailing Address Bdw Publishing  
17995 Bakers Farm Rd.  
Colorado Springs, CO 80908

E-mail brian@MinorPlanetObserver.com

Internet <http://www.MinorPlanetObserver.com>

Newsgroup <http://groups.yahoo.com/group/MPOSoftware/>

The web site provides e-mail links to MPO, links to the Minor Planet Center, and information on asteroids reaching opposition or of interest in a given month.

↳ The Yahoo news group is the preferred method of technical support since this allows you to take advantage of the knowledge and experience of many other users. If you want to keep the discussion private, you can send email to the moderator via the group or using email address above.

## About the Manuals

Printed manuals are not provided. Instead, Adobe PDF documents can be found in \MPO\DOCS. However, we know that some people prefer printed documentation and so the manuals are "printer friendly."

The Users Guide in \MPO\DOCS gives you a once through the basic procedures of measuring an asteroid and then calculating its rotational period. The User's Guide is meant to cover the "how to" of the software while the Reference Guides fill in the details of the inner workings. Use them together, giving first preference to the Users Guide. The examples in the Users Guide are fairly straightforward and so are not always typical of "real world" issues. For those, you will need knowledge gleaned from the pages of the manuals. After you have mastered the program basics, take the time to read the manuals.

It is assumed that the user has a basic level of knowledge about the operation of CCD cameras and fundamental image processing functions. If you have questions about obtaining dark fields or flat fields, please refer to the reference materials provided with your CCD Camera.

## Multiple Instances and the MPO Server Application

MPO programs use a client-server methodology. This means several things:

- A separate "server" application must be run in order to use the MPO programs (clients). To simplify things, the installation program sets up this server application automatically so that it should run when Windows starts. Also, each MPO program checks to see if the server is running before it tries to start its database access. If the server is not running, then the program tries to start it. As for the server application itself, you should never have to change any settings or worry about it.

- You can run multiple instances of Canopus and the Asteroid Viewing Guide, or one of each. Only single instances of Connections or SBScripter can be run on a given machine. *This is NOT a way around the license agreement, which says that you cannot be running Canopus on more than one machine at a time - unless you have the educational license that allows running on up to five different machines simultaneously.*

The use of the new database engine means that if you are installing over version 8.x or older, you must convert at least some files. See "Converting Data from Previous Versions" before you run the installation program.

## Running on Microsoft VISTA / Windows 7

The MPO programs have been tested on MS Vista (32-bit) and Win7 (64-bit). It is required that you **turn off User Account Control (UAC)**. After installation, you can try resetting UAC to the "Default" level – one below maximum – and see if the programs will still operate. Most tests using the minimum UAC level failed, however.

### If You Still have Trouble

Try turning off UAC entirely, setting the compatibility to WinXP (Vista) or XPMode (Win7), and forcing to run as administrator.

## Installation

By default, the installation program tries to locate a previous installation and, if found, the base directory is set to the same one as the current installation.

↳ If upgrading, it is recommended that you install over the previous version so that multiple versions are not on your system. If you are installing over an older version, please see "Converting Data from Previous Versions" *before* running the installation program.

All MPO software and supporting files come on a single-sided DVD. The UCAC3 catalog is on a double-sided DVD.

### Setup/MPOSC3

The Setup/MPOSC3 DVD contains all MPO programs embedded within the SETUP.EXE as well as the MPOSC3 catalog, examples, Henden charts, and the Photometry Workshop and directly accessible files.

### UCAC3

This is a double-sided DVD with the USNO's UCAC3 catalog.

↳ Because it is double-sided, the only labeling on the USNO-supplied UCAC3 DVD is on the inner hub ring that says "USNO Side 1 (2)". ***The DVD does not contain the old USNO A1(2) catalog.***

***MPO-supplied copies of UCAC3 have no additional labeling beyond the manufacturer's "Side A" and "Side B" imprinted on the inner hub.***

If available, proper motions are included in the calculations of positions for use in the MPO programs. For this reason, using the UCAC3 catalogs dramatically improves astrometry.

### UCAC2 vs. UCAC3

It is recommended that if you have it installed, that you remove UCAC2 from your hard drive and that you use only UCAC3. If you wish to keep both catalogs, MPO software still supports both, though you should use one or the other at any given time.

## Location of DLL, INF, and SYS Files

If installing MPO Connections, then depending on selected options, the MPO installation program may invoke Apogee, FLI, and/or SBIG driver installation programs. These automatically install and register the necessary files.

## To Install MPO Programs:

1. Insert the SETUP/MPOSC3 DVD and run  
x:\SETUP (in the root directory of the disc)
2. Follow the instructions in the installation wizard.
3. ***The installation program covers all MPO programs, not just those you purchased. When asked which programs to install, select only those that you purchased (for which you have product release codes).***

**You must have the release code for each product you purchased.** If you have lost the card with the codes, contact Bdw Publishing for a replacement.

↳ If you have previously installed MPO Connections or the Asteroid Viewing Guide and chose to install the MPO Star Catalog (MPOSC3) to the hard drive, you should use the same base directory for the installation. This avoids having multiple sets of the same files.

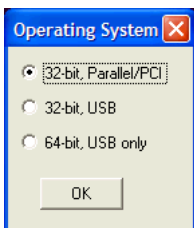
## MPO Asteroid Viewing Guide

If you're running the limited installation of the Viewing Guide, one that installs only the new EXE and CHM (help) files along with the data files for the specific year, e.g., files for 2011 when installing MPO2011, the installation copies the EXE and CHM to the \MPO\PROGRAMS directory, renames the \MPO\DATA directory to \MPO\DATA\_OLD (if DATA\_OLD doesn't already exist), and then puts the new files into \MPO\DATA.

This way, you can rename each "DATA\_OLD" to a specific year, e.g., DATA\_2010. When you want to go back to a year, temporarily rename the current \MPO\DATA to another name, e.g., \MPO\DATA\_CURRENT, rename the DATA\_OLD to DATA, and then run the MPO viewing guide program for the chosen year. For example, MPO2010.EXE to review the 2010 files.

## Camera Driver Installation (MPO Connections only)

If you are installing MPO Connections, you will see this dialog form:



If you will be using a parallel camera (supported under 32-bit systems only), select the first option. If installation on a 64-bit system, Vista or Win7, be sure to select 64-bit USB only. This choice determines which driver installation programs are run and, for FLI, which drivers are installed.

Some special drivers are need for Apogee parallel cameras on WinNT/2000/XP. The installation program attempts to run an installation programs to install these special files. The attempt is not always

successful. If you get an error, complete the installation and then follow the steps below. Open Connections and see if you can connect to the camera.

## Apogee

1. Open a DOS box and go to the MPO\PROGRAMS directory.
2. At the command prompt, type:  
ApogeeIOInstall <ENTER>

The command prompt returns after a second or two. There is no specific indication if the installation succeeds. The best test is to try to connect to your camera.

## Finger Lakes

The Finger Lakes parallel port cameras do not work (or very rarely do) on Win NT/2000/XP unless you happen to have an ECP parallel port card that can be forced to live at one of the standard LPT port addresses. Most modern parallel cards do not fully meet this requirement even though they claim legacy support.

## SBIG, Apogee, FLI Driver Installers

If you chose SBIG, Apogee, and/or SBIG camera support, the MPO installation program will run the driver installer programs developed by those manufacturers. Follow the instructions for each installer carefully. Once the programs run, they return to the MPO installation program, which continues from that point.

↳ You must have an active Internet connection to run the SBIG driver installation program since it touches the SBIG servers to download the latest files.

## Uninstalling Programs

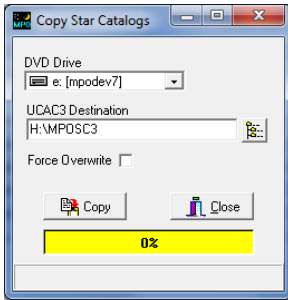
1. Select Start | Settings | Control Panel from the Windows task bar
2. Select Add/Remove Programs
3. Select the MPO Suite in the list of programs
4. Click the Add/Remove button. Follow the instructions.
5. The Uninstall does not completely remove the MPO tree because there may be a few, inconsequential files in some sub-directories. It is perfectly safe to use Explorer to delete the root MPO folder and thus remove the last traces of the programs and associated files.

This removes all files, including those for Connections and the Asteroid Viewing Guide. ***It also removes user data files, e.g., astrometry and photometry sessions.*** Be sure to make a backup of the data files in case you want to reinstall later and not lose data.

## Manually Installing Star Catalogs

Should you choose not to install the MPO Star Catalog (MPOSC3) or UCAC2/3 catalogs to your hard drive but want to do so later, you can do so.

## The Catalog Copy Program



Use this program to copy the UCAC3 catalog to your hard drive. It is found in \MPO\PROGRAMS. The speed button to the right “UCAC3 destination” field allows you to select an existing or create a new directory.

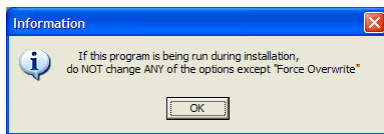
### Force Overwrite

Check this box to force overwriting existing files. This is useful if you suspect the files have been corrupted. If the box is not checked, then files are copied only if they are older than those on the DVD. **This box must be set as you want before you click Copy.**

↪ The program waits for disc swapping as needed. Be patient! Wait until the DVD fully spins up before you try to proceed. This can take 10-20 seconds, *or more*. **Depending on the drive, it may appear to “spin up” but may still not be ready for many seconds afterwards.**

## Catalog Copy During Installation

↪ The Catalog Copy program is run automatically during the MPO installation if installing the MPO5C3 catalog. In this case, you’ll see this message.



**It is important that you not change any of the settings if the program is being run during installation.**

A message appears after the copy is complete asking you to insert the SETUP DVD. Once DVD drive has spun up **completely**, click OK on the message and then click Close on Catalog Copy form.

↪ The installation continues only after you close the Catalog Copy program.

## Manually Copying the UCAC3 Catalogs

1. Start the CatalogCopy program (in \MPO\PROGRAMS)
2. Select the source drive (where the DVD is found) and enter or select the output directory.
3. Click the Copy button.
4. Follow the on-screen instructions.
5. Click Close to close the program.
6. Update the Configuration | Catalogs page settings in at least one MPO program before trying to use the newly copied files.

## The USNO Catalog (A1/A2 – NOT UCAC3)

7. Create a folder off the root of the hard drive, e.g., C:\USNO

8. For each CD in the set (one for the S series, 10 for the A1 series, and 11 for the A2 series), place the CD in a CD drive.
9. Using Windows Explorer, highlight all files on the CD with the ACC and CAT extensions.
10. Right click over the selected files and select Copy from the popup menu.
11. Right click on the USNO folder icon you created in step #1.
12. Select Paste from the popup menu.
13. Repeat until all files from all CDs are copied.
14. Modify the Configuration settings to indicate the location of the files.

## Installing Over Previous Versions

It is recommended that you install over a previous version (after making necessary backups) and not create a new installation. Otherwise, there may be confusion as to which version is actually being used.

**Make backups of critical user files (see “The Mighty Five” below) before uninstalling an old version and starting the new installation.**

If you run Convert10 during the installation against you older version files, then your files will be ready to go as-is. If you did not run Convert10 but the Mighty Five files are from v9.x, then the MPO programs will convert the files automatically as you open a program that uses the files.

## Converting Data from Previous Versions

Several changes have been made to the data tables since the MPO programs were first written. In order to be able to use files from all versions, you may need to convert some or all of your existing data files.

## When am I Required to Convert Files?

The short answer is “only if you are upgrading from any version prior to v9 or if you have some PhotoRed observations (OBS) and/or Connections script (CSI) files from pre-v9.5.” If none of this applies to you, then you can skip the rest of this section on data conversion.

## Prior to V9.0

All MPO database files in versions *before* v9.0 have the extension FFD. These files are incompatible with the v10 MPO Server. When installing v10, core data files (stars, DSOs, etc.) are replaced with the proper version (\*.FF2). Critical user files (see discussion below) are NOT replaced and must be converted first to v10 format and then to include additional data fields in some of the tables.

## Version 9.x

V9.x files have the FF2 extension but some tables may be missing some data fields. The MPO programs convert these tables automatically as the program starts, so it is **not** required to run the Convert10 program involving FF2 files.

Pre-v9.5 versions of the PhotoRed OBS and MPO Connections CSI (script) files do need converting. If you have such files, then run the Convert10 program and convert *only* those files.

## New Installation

If you've never installed MPO software before, you do not have to convert any data files. However, if you are trying to use Canopus *export sets* (see the Canopus manual) obtained from other users and those files are v8.x or before, then you must convert them before trying to use them.

## The “Mighty Five”

This is not the five famous Russian composers (can you name them?) but the five critical *user-maintained* files in the MPO data system.

### PHSESS

Canopus photometry sessions

### PHOBS

Canopus sessions observations

### AAVSO

PhotoRed AAVSO reports

### AAVSO2

PhotoRed AAVSO reports, auxiliary data

### DOUBLESTARMEASUREMENTS

This table contains double star observations.

Canopus allows you to export data from the PHSESS/PHOBS files for data exchange or archiving. These are called *export sets* that come in pairs, one ending with “\_SESS.FF2” and the other with “\_OBS.FF2” (without the quotes). These files may also need converting.

↳ *It is strongly recommended that you make backups of the “Mighty Five” files (if they exist) and all export sets before running any installation and/or conversion program.*

## UserElms and UserStar

Two other files that you may want to protect are UserElms and UserStar. If you are upgrading from v9.x, make copies of these and restore them after installation but before you open any MPO program. If you are upgrading from before v9, you must use the v10 files and re-enter any data in those two files.

↳ These files are also converted on-the-fly, so it is not required to run the Convert10 program. In fact, Convert10 does not convert the UserElms file and so you must rely on the automatic conversion.

## Converting on-the-Fly

MPO Canopus converts the Mighty Five, *export sets*, and USERELMS files as it loads them. Therefore, it is *not required* that you convert these files beforehand. If you have a large number of export sets, then it might be worth running the Convert10 program to get them all done at once. Again, this is not required and if running the Convert10 program seems daunting, then don't use it.

## Version 9.5 and V10 Compatibility

You can exchange files with colleagues still using v9.5.x. When they send you files, Canopus automatically converts them to v10. If you send them v10 files, they will work in v9.5. The new data fields in v10 will be “invisible” to v9.5 users, meaning they will not have access to or be able to update those fields.

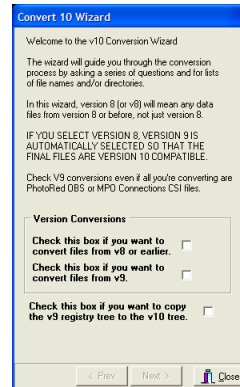
↳ The new “CM” (comp star catalog magnitude) fields in v10 \*SESS files will be set to 0 if exporting from v9.5 and then importing back into v10. If you are relying on those fields to be catalog values (you are using the “*DerivedMags*” method), then you will have to re-enter the values. See the Users Guide and Reference Manual for more information.

## QuickMags

Those using Canopus/PhotoRed prior to v9.4 may have used the QUICKMAGS file. This is no longer used nor supported. There is no conversion to the AAVSO files since many fields required in the AAVSO tables were not stored in the QUICKMAGS table. V8.x and before have only the PHSESS and PHOBS files in common with v10. The other three “Mighty Five” files did not exist in those earlier versions.

## Running the MPO Convert10 Program

The Convert10 program is a “wizard-based” program that collects information along with lists of files to be converted and then runs through the conversions in one step.



### Version Conversions

This section asks from which previous versions (9, or 8 and earlier) you want to convert data files. Check the appropriate boxes. You can do both types of conversions in a single pass.

↳ *Because the MPO programs convert files on-the-fly, you are not required to run the Convert10 program at all – unless – you are upgrading from v8.x or before, or you have PhotoRed OBS or MPO Connections script files from pre-9.5. If only the latter applies, do not run conversions on any other data files.*

↳ You will not harm anything if you convert files that do not need or have already been converted. However, computers being computers, you should always make a backup before running any conversion program.

### Copy v9 Registry

Version 10 stores its registry entries in its own “tree”. You can choose to copy the version 9 settings, including profiles, Connections exposure parameters, etc. as part of the conversion. This option can be run independently of any data file conversions, i.e., it is not required to choose either data file conversion option to copy the v9 registry.

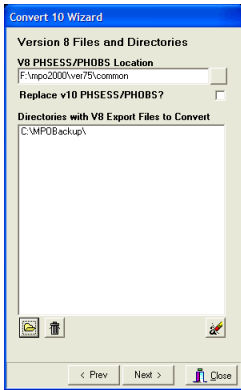
Which pages of the wizard you see depends on which options you select on the first page.

### Follow the Wizard

Use the Next and Previous buttons to move through the Wizard. There are groups of pages for V8 and V9 conversion. You will see only those pages that are required to gather information for the options you choose along the way.

Most of the pages are self-explanatory. Some of them are covered in more detail below.

## Version 8 Files and Directories



### V8 PHSESS/PHOBS Location

Use the speed button to the right of the “Location” field to specify the directory where those two files are found.

### Replace V10 PHSESS/PHOBS?

Check this box if you want to have the converted PHSESS/PHOBS files replace the ones installed with version 10.

### Directories with V8 Export Files to Convert

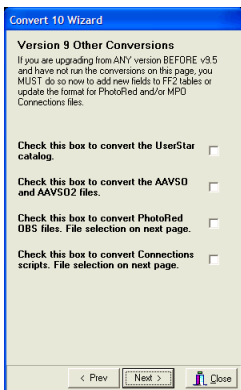
Use the open folder button at the bottom to open a select directory dialog and select a location for V8 “export sets” (\*\_SESS.FFD/\*\_OBS.FFD). You can enter more than one directory in the list.

↳ If you have subdirectories of files, you must specify each subdirectory separately, i.e., the conversion does not do a recursive search of directories.

The “trash can” button deletes the highlighted directory from the list.

The “eraser” button deletes all entries from the list.

## Version 9 Other Conversions



### UserStar

This file in v10 also stores SDSS gri magnitudes. This file is automatically converted when you load Canopus or Connections and so it is not mandatory that you convert it here.

### AAVSO/AAVSO2

These files (two of the “Mighty Five”) are also converted automatically when you open Canopus. It is not mandatory that you convert them here.

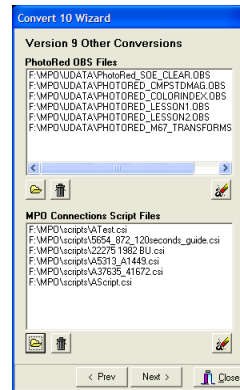
## PhotoRed OBS Files

V9.4 changed the format of the PhotoRed observations (OBS) files. It is mandatory that you convert these files otherwise Canopus/PhotoRed may lock up. If you have any OBS files and are not certain if you used them in v9.5x, convert them here.

## Connections Scripts (CSI)

Several things changed in Connections scripts before v9.5. Here again, if you are using Connections and are upgrading from before 9.5, you should run these conversions on all CSI files.

If you select either OBS or CIS files, you will see this page. In this case, you must select individual files, not just directories.

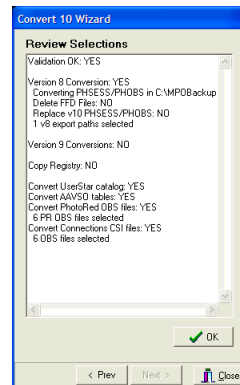


The “open folder” button displays a multi-select file dialog where you can pick one or more files from a given directory.

The “trash can” button deletes the highlighted item from the list immediately above it.

The “eraser” button deletes all items in the list immediately above it.

## Review Choices

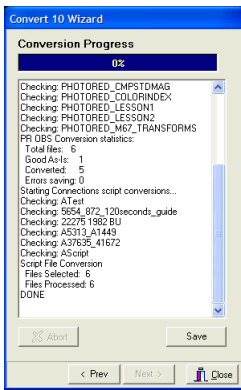


After you have made your selections, the final page before proceeding allows you to review your choices. If the selections are all valid, then “Validation OK: Yes” appears in the top line of the memo field and the OK button is enabled. If there is an error with any of the selections, the OK button is disabled and the memo field will indicate the problem.

Note that the review screen says “Version 9 Conversions: NO”. This refers only to converting the PHSESS/PHOBS files. Other members of “The Mighty Five” that need conversion are treated independently.

## Convert the Data

To proceed with the conversions, click the OK button. The wizard will switch to another page where the progress of the conversion is reported, including any errors that may have been encountered.



You can right-click over a slide at any time to display a menu. This menu allows you skip to the next or previous slide, or to a specific slide in the presentation. A PDF of the entire presentation (with six slides per page and slide numbers at lower right of each slide) can be found in the \MPO\DOCS directory.

EXTINCTIONTRANSFORMS.PDF

☞ If you selected to copy the v9 registry to v10 and the v10 tree already exists, a brief message appears. This is *not* an error but simply to inform you that the tree did not need to be copied.

### Save

Once the conversion is complete, you should click the Save button and save the contents of the progress memo in case there is a problem and you need to contact tech support.

### Close

Click the button to close Convert10.

## Shirts and Shoes *not* Required

If you have any questions or doubts about data conversion, contact technical support before you convert your data. Since the MPO software converts the most critical files on-the-fly, there is little reason to run Convert10 for those upgrading from v9.5 and who have no legacy files from before then.

If all the legacy files are v9.x, then the only conversions that *might* be required are for PhotoRed observations (OBS) and MPO Connections scripts (CSI) files.

Other than these situations, the only time running Convert10 is *required* is if you are upgrading from v8 or earlier.

***It bears repeating that there is no substitute for having a good backup. Make backups of your critical files before you run the installation and/or the Convert10 programs.***

## The Photometry Workshop Files

The Photometry Workshop files consist of a PowerPoint® PPS (presentation only, the file cannot be edited in PowerPoint) and a number of supporting files. The presentation includes slides and audio with the total running time about 56 minutes.

This is an enhanced version of a presentation given at the Society for Astronomical Sciences 2009 Symposium on Telescope Science and covers the essentials behind finding and using extinction and transform values for your system. Applying these terms to your raw data allow you put that data onto a standard magnitude system.

## Running the Presentation

In the MPO group folders, there is a link to the presentation. Double-click on it to start the presentation. You can also double-click on the PPS file in Windows Explorer that is found in \MPOWORKSHOP.

☞ You must have an audio card and speaker/headphones to hear the audio.