ASTR598: Astronomy with SDSS

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Class Schedule

1. **March 29** Class Outline
2. **March 31** SDSS and other Surveys
3. **April 5** What does SDSS measure (and how), Data quality
4. **April 7** Data Access Tools, Data Analysis
5. **April 12** Solar System Science *Paper presentation by Mike*
6. **April 14** Normal Stars, *Paper presentation by Kevin*
7. **April 19** Weird Stars, *Paper presentation by John*
8. **April 21** Milky Way Structure, *Paper presentation by Lucianne*
9. **April 23 (Friday 3:30–4:30)** Galaxies: Spectroscopic Targeting, Observed Properties, *Paper presentation by Amy*
10. **April 26** Galaxies: Ellipticals, AGNs, Star formation, *Paper presentation by Alyson*
11. **April 28** Quasars: Historical perspective, Selection algorithms, *Paper presentation by Andrew*
12. **April 30 (Friday 3:30–4:30)** Quasars: First results
13. **May 3** *** No class – LSST meeting
14. **May 5** $d$(SDSS)/dt: an eye towards LSST, *Paper presentation by Stephanie*
15. **May 10** *** No class – LSST meeting
16. **May 12** SDSS sources at other wavelengths: from radio to X rays
17. **May 17** Clusters of Galaxies: Methods, First results, *Paper presentation by Daryl*

18. **May 19** Project Discussion, *Paper presentation by Richard*

19. **May 24** Weak Lensing, Large scale structure, Cosmological Parameters

20. **May 26** Project Reports

21. **May 31** *** No class – AAS Meeting

22. **June 2** *** No class – AAS Meeting

23. **June 7-9** Finals Week

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**Term Projects**

1. Finding Comets in SDSS Imaging Data: **Michael Solontoi**

2. Stellar SEDs from SDSS and 2MASS: **Kevin Covey**

3. Interpretation of Stellar Colors Using Kurucz Models: **Daryl Haggard**

4. Principal Component Analysis of SDSS Stellar Spectra: **Amy Kimball**

5. Variable Stars in SDSS Spectroscopic Database: **Richard Plotkin**

6. Stellar Variability from SDSS Multiepoch Data: **John Bochanski**


8. Constraining Dust Extinction Using SDSS and 2MASS Stars: **Anil Seth**

9. Far-UV to near-IR SEDs of stars, galaxies, and QSOs using GALEX, SDSS and 2MASS: **Lucianne Walkowicz and Marcel Agueros**

10. Comparison of Galaxy Colors for Clusters vs. Field: **Stephanie Morris and Andrew West**
Science Topics: selected SDSS papers

The suggested SDSS papers are enumerated according the the list available at

http://www.astro.princeton.edu:81/cgi-bin/npublications.pl/display_index

2. Stars: Normal and Weird, Single and Multiple: 10, 21, 27, 59, 91, 131, 150, 175, 224, 348, 349
5. Quasars and AGNs: Selection and Properties: 47, 49, 55, 73, 106, 133, 195, 230, 246, 257, 290, 313

Choose one paper (or several related ones), and prepare 20 min long presentation. The use of transparencies (or digital slide show) is encouraged (presumably including the most important figures from the paper). Pretend you did the work yourself and are giving an invited talk at a meeting. There will be a 5-10 min long question and answer session after the talk. The purpose of this exercise is to 1) learn some SDSS science, 2) practice extracting relevant information from papers 3) practice giving talks.

Do not forget the following 1) empty your pockets (no loose change, keys, and such), 2) talk slowly and sufficiently loud, 3) don’t look at the floor, control your audience with direct eye contact, don’t turn your back to the audience, don’t be agressive with the pointer 4) don’t rush (don’t overload your 25 min long presentation), concentrate on most important points, 5) emphasize what are the truly new, and, possibly, unexpected results. 6) comment on the limitations and pitfalls of the presented analysis; how do we know it’s right, could it be wrong?

A tentative schedule for presentations is listed below.

Please send me your paper number ASAP at ivezic@astro.princeton.edu

And the chosen ones are:
1. Solar System: Asteroids, Comets and Kuiper Belt Objects:

- **Michael Solontoi** paper 149: Ivezić et al. 2002 (AJ, 124, 2943) *Color Confirmation of Asteroid Families*

2. Stars: Normal and Weird, Single and Multiple:

- **Amy Kimball** paper 175: Raymond et al. 2003 (AJ, 125, 2621) *A First Look at White Dwarf - M Dwarf Pairs in the Sloan Digital Sky Survey*
- **John Bochanski** paper 224: Harris et al. 2003 (AJ, 126, 1023) *An Initial Survey of White Dwarfs in the Sloan Digital Sky Survey*
- **Kevin Covey** paper 150: Margon et al. 2002 (AJ, 124, 1651) *Faint High Latitude Carbon Stars Discovered by the SDSS: Methods and Initial Results*

3. Milky Way Structure: Disks, Halo, Kinematics, Dust:


4. Galaxies: Colors, Spectra, Luminosity Function:

- **Stephanie Morris** paper 147: Kauffmann et al. 2003 (MNRAS, 341, 33) *Stellar Masses and Star Formation Histories for 80,000 Galaxies from the Sloan Digital Sky Survey*
5. Quasars and AGNs: Selection and Properties:

- **Daryl Haggard** paper 73: Vanden Berk et al. 2003 (AJ, 122, 549) *Composite Quasar Spectra From the Sloan Digital Sky Survey*

6. Clusters of Galaxies, Lensing, Large Scale Structure: