

coccinea) oaks were evaluated using an inoculation method developed in France where this pathogen causes basal cankers to form on northern red oak (*Q. rubra*). In addition to species, crown position was also considered as a susceptibility variable. Dominant and suppressed oak trees were inoculated at 1.4 m. Lesion development was assessed six months later using canker length and width as indicators of susceptibility. Attempts were also made to isolate *P. cinnamomi* from resulting cankers. Cankers were consistently observed on trees of both crown classes of all three species. These results suggest that *P. cinnamomi* should be a serious pathogen of these oak species in the southern Appalachians and may be an unrecognized contributor to oak decline.

The Design, Analysis, and Implementation of System Interfaces that Integrate the Magellan AIV-10 Global Positioning System Module and the Motorola RPM 405i Radio Packet Modem
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Advances in communications technology have resulted in a growing interest in wireless transmission of data and messages. This is generally achieved through Cellular Digital Packet Data (CDPD) or radio packet communication. Expensive systems that provide real-time tracking and messaging have been developed using these technologies. In this paper, the authors describe the construction of system interfaces resulting in the development of a prototype information system that integrates a global positioning system (GPS) receiver and a radio packet modem (RPM). The GPS receiver is the Magellan Systems Corporation's AIV-10-OEM GPS Module. Motorola Inc.'s RPM 405i was the radio packet modem used. The RPM 405i transmits radio signals over the ARDIS (joint venture of Motorola and IBM) network to achieve wireless communication. A geographical mapping system, Blue Marble Graphic's MAIL Map, was also used to display digital maps and tracking information. The authors designed and tested interfaces coded in C++, Visual BASIC and FoxPro. The completed system was constructed primarily from "off the shelf" components. Major design considerations influenced primarily by budgetary and time constraints, integration challenges, and other issues are discussed.

The Origin of Ferromagnetism?
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As Richard Feynman explains (1977), the ferromagnetic property of iron can be analyzed by noting that the "Spin up energy = $\mu(H + \lambda M/2c^2)$, ... [but] when quantum mechanics was first being understood, many people have been making various estimates and semiclassical calculations, trying to get a theoretical prediction for λ . The most recent calculations ... still give the wrong sign..." Preliminary results on calculations which seem to give the correct sign for λ will be presented. These calculations use

second order perturbation theory and allow an analysis of the critical importance of anti-symmetry in the calculation.

Improving Student Attendance at Science Seminars
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The importance of research in science is emphasized at all levels of instruction. However, due to limitations of time and resources, little active research occurs at many two year colleges. In an attempt to provide students with some exposure to current research, a Science Seminar Series was started at Midlands Technical College in the Fall of 1994. Speakers have included full time and adjunct instructors, scientists from local colleges and hospitals, community members, and students. Attendance has increased from five individuals at the first seminar to 112 at the most recent. Several factors were examined to determine which were likely to have contributed to this growth. Semester, day of week, and time of day appeared to have little effect upon average attendance, whereas the presence of an explicit invitation to students on the seminar announcements and the offer of extra credit to attendees did positively affect attendance.

A Low-Resolution Fiber Optical Spectrograph for the
College of Charleston's DFM-18 Telescope
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We report on the construction of a bench-mounted, low-resolution astronomical spectrograph that will be housed in a custom-built, temperature controlled enclosure a few meters from the College of Charleston's 18 inch reflector. Starlight from the Cassegrain focus of the telescope, as well as light from calibration sources, is brought to the spectrograph through a 100 μ diameter fused silica optical fiber. Our spectrograph design utilizes commercially available optics and mounting hardware to minimize costs. The spectrograph uses a 270 mm achromatic lens collimator at f/9 to produce a 30 mm beam illuminating a 120 l/mm grating blazed at 5000 \AA in the first order. The camera is a 135 mm commercial camera lens which gives a linear reciprocal dispersion of 80 $\text{\AA}/\text{mm}$ with the above grating. The detector for the instrument is a Santa Barbara Instruments Group ST-8 CCD camera. This camera is thermoelectrically cooled to minimize dark noise and has a format of 375 x 243 pixels. This will give a total spectral coverage of about 510 \AA at this resolution. Drawings and photographs of the spectrograph design and implementation will be presented along with examples of representative stellar spectra obtained.

THE SOUTH CAROLINA ACADEMY OF SCIENCE
Founded 1924, Columbia, South Carolina

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The South Carolina Academy of Science, together with the South Carolina Junior Academy of Science, is the only statewide interdisciplinary science organization whose membership includes high school students, teachers, administrators, college students, professors, scientists, related professionals, parents of students, college presidents, business executives, small and large businesses, financial institutions, and institutions of higher education.

Its purposes are:

- To promote the creation and dissemination of scientific knowledge within the state of South Carolina by stimulating scientific research and publication.
- To improve the quality of science education in the state of South Carolina.
- To foster the interaction of business, industry, government, education and the academic scientific community.
- To improve public understanding and appreciation of science for its utilization in human progress.
- To encourage young people to become involved in science through support of the Junior Academy of Science.

The South Carolina Academy of Science (SCAS) was organized in 1924, and in 1927 the Academy affiliated with the American Association for the Advancement of Science. Publication of the *Bulletin* of the Academy began in 1935, and in 1973 the *Newsletter* was established as a vehicle for communication among members. Beginning in the 1980s, industry and business joined academic institutions in support of the Academy and have helped to set goals to aid and improve the development of science in South Carolina. Its annual meetings provide a forum for the exchange of scientific information among members. Sponsorship of numerous awards, science programs and student research projects are yearly activities of the Academy.

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