AN AUTOMATED SOFTWARE PROGRAM FOR COMPLETE CONTROL OF A FOURIER TRANSFORM MICROWAVE SPECTROMETER

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Over the past several years, we have been developing a software package (LZ98) which is used for automated control of a pulsed molecular beam Fourier transform microwave (FTMW) spectrometer.[a] It is a Windows graphical user interface (GUI) program. In its current configuration, it can be used to control all the functions of the instrument via a computer keyboard or mouse. A list of the electronic components that have been interfaced to date will be provided. A new pulse control card has been implemented that fits into an ISA slot of a standard Pentium-based computer. The computer controlling the instrument has been set up as an Internet server in order that scans can be viewed remotely simply by logging into the NIST network. With the most recent software version, it requires 1.5 hours to scan 1 GHz (10 pulses per step, 500 kHz/step, at 10 Hz). Thus it is possible to automatically scan from 10-20 GHz in 15 hours (overnight). In these scans, all data is stored and can be retrieved simply by clicking on the transition of choice. Additional functions such as scans in time or a list of molecular frequencies is also part of the software package. When a frequency scan is finished, the software can export an ASCII file that is directly compatible with the JB95 program as discussed by David Plusquellic in this Symposium.

[a] R. D. Suenram, Jens Uwe Grabow, Andrei Zuban, and Igor Leonov, Rev. Sci. Instrum. 70, 2127 (1999).