§20. Development of FECnet Utilization and its Application to Education

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The computer network, FECnet was introduced at National Institute for Fusion Science (NIFS) for real-time analysis of experimental plasma physics and nuclear fusion research. Physicists at universities, which can be far from the NIFS site, can access the network in NIFS directly and join the experiments with real-time images, sounds and so on. This year, we constructed an on-demand video learning system to study nuclear fusion research via the internet, as an extension of the FECnet system.

We adopted one of the most popular streaming technologies, called RealVideo system, to distribute video data. With this technology, one can start to look at the video via the internet immediately while receiving the rest of the video data at the same time.

We experimentally opened the streaming video server at the following URL

http://www.cc.mie-u.ac.jp/~lp20103/video/index.htm.

Figure 1 is an example of the video clip on a PC display, showing a first part of the NIFS promotion video. A combined video data for 150 and 34 Kbps line speeds were prepared so that the distributing data are switched automatically from one to the other according to the internet speed. The data are as large as 54 MB for 21-minute long video but one can start to look at the video within a few seconds after a mouse click.

More than 50 hits were obtained within a few days after the introduction of this video server to the nationwide mailing list for technology teachers in junior-high schools. As such, video images are more attractive, persuasive and effective than usual web pages. The streaming technology is applicable also for live image distributions, which can be effective for both purposes of distance learning and cooperative work using the internet.

Fig. 1 Streaming video image.