Over the three years that the Edinburgh Anisotropy Project has been running, a significant number of computer programs have been written with a view to analyzing the effects of seismic anisotropy from multi-component data sets. The computer programs contain a number of important new tools for understanding and evaluating the behaviour of split shear-waves.

The computer software has been collected together to form a Shear-Wave Analysis Package (SWAP). Commercially available computer software for seismic processing often fails to offer specific routines for processing multi-component data. SWAP has been developed to fill this gap.

The computer programs have been sub-divided within the package according to their function: anisotropic estimation; plotting; complex component analysis; inversion; etc. (see accompanying diagram). Using a simple menu system, the user is guided to various program categories, from which he is able to select the program he requires.

The talk discusses SWAP in more depth, and will use examples of multi-component VSP field data to demonstrate the package in use.

A summary of the routines within the package is given below:

1. **Anisotropic Estimation:** Over ten computer programs that automatically process multi-component data to give estimates of the polarization angle of the leading split shear-wave and the time delay between split shear-waves have been collected together. These programs have either been developed by members of the Edinburgh Anisotropy Project or taken from published papers. A plotting routine is provided that allows a comparison of the output from the various estimation methods on the same data set.

2. **Plotting:** Programs included in this section allow the plotting of three component seismograms and particle motion diagrams on a workstation. The programs combine together many of the following features: automatic scaling that maintains the relative scale between geophone components, geophone rotation, interactive picking of regions of interest and start times from seismogram plots, simultaneous trace and particle motion plotting, and hard copy output.
3. **Complex Component Analysis**: This analysis transforms multi-component seismic data from Cartesian co-ordinates to polar co-ordinates. This allows the instantaneous attributes of amplitude, polarization, and frequency to be displayed as a record section, giving an effective way of identifying splitting and stratigraphy information.

4. **Inversion**: A database inversion technique has been developed to invert shear-wave polarizations estimated from VSP experiments and to interpret them in terms of the type and orientation of the anisotropy in each layer of the multilayered subsurface. This section gives access to the inversion routines and the database, which contains distributions of polarization angles computed for over 40,000 models.

5. **Seismogram Processing**: Basic seismic processing routines are included in this section (e.g. geophone rotation, trace filtering etc.).

6. **Utilities**: A number of basic functions are given that will normalise, scale and baseline restore three-component seismograms.

7. **Data Conversion**: Routines that have been written to transpose seismogram data between the supported data formats are found in this section.

The source code for each computer program is written in **Fortran** 77. Use is made of the Graphic Kernel System (GKS) and UNIRAS for plotting.