Command	ARIDGE
PURPOSE	Find ridge line in a 2-dimensional analyzer

PARAMETERS

ANLID	Name of analyzer
/CONDITION(c)	Consider only the part of the spectrum within the condition “c”
/WINDOW(c)	Consider only the part of the spectrum within the window “c”
/LIMITS(l)	Consider only the part of the spectrum inside the given limits. 4 values must be given: x_{lower}, x_{upper}, y_{lower}, y_{upper}.
/DESTINATION(d)	The coordinates of the ridge line are written to the analyzer “d”. If the analyzer does not exist, it is created with the appropriate limits.
/DIMENSION(d)	Specifies the dimension along which the ridge line is to be determined. This is also the dimension along which the destination analyzer is created.
/MEAN	Evaluate the ridge position for each vector by calculating the mean value. This is one of the options of the first step of the ridge evaluation.
/PEAK	Evaluate the ridge position for each vector by determining the peak value. This is one of the options of the first step of the ridge evaluation.
/FWHM(f)	Fix the FWHM for the peak search (see keyword “/PEAK”).
/CURSOR	Enter some points representing the ridge position by the cursor. This is one of the options of the first step of the ridge evaluation.
/INTERPOLATION	Determine the ridge line by interpolation of the individual ridge positions. This is one of the options of the second step of the ridge evaluation.
/POLYNOMIAL(i)	Determine the ridge line by fitting a polynomial of degree “i” to the individual ridge positions. This is one of the options of the second step of the ridge evaluation.
/SMOOTH(r)	Determine the ridge line by a smooth line adapted to the individual ridge positions. This is one of the options of the second step of the ridge evaluation. The parameter value “r” (r>=0) gives the allowed deviations of the smoothed curve from the individual ridge points. Larger values of “r” result in more smooth functions.

FUNCTION

The ridge line of a 2-dimensional analyzer is determined and stored into a 1-dimensional destination analyzer. The procedure consists of three steps:

1. Cutting the 2-dimensional array in a number of 1-dimensional vectors and determining the individual ridge positions either by calculating the mean value or by evaluating the peak position. As an alternative, the ridge position my be indicated by the cursor.
2. Evaluating the ridge line on the basis of the individual ridge positions determined in the first step. A polygon line connecting the individual ridge points by straight lines, a polynomial, and a smooth function can be selected.
3. Output of the coordinates of the ridge line to the destination analyzer.

REMARKS

The 2-dimensional analyzer should contain only one ridge. If there are more than one ridges in the spectrum, the ridge to be treated should be selected first by a “banana” window with the command W2SET.
The counting rate along the ridge line is taken into account in the evaluation: Regions with higher counting rate have more weight.

EXAMPLE

ARIDGE AIN / WINDOW(A) MEAN POLY(4) DIM(1) DEST(R)
Find the ridge line in the spectrum AIN considering only the data inside the display window “A”. Determine the individual ridge points by cutting arrays in y direction for each x channel and evaluating the mean values of these data arrays. Finally, fit a polynomial of fourth degree to the individual ridge points and store the coordinates of the resulting ridge line to the destination analyzer “R”.

ARIDGE A2 / PEAK SMOOTH(0.1) DIM(2) DEST(RIDGE)
Find the ridge line in spectrum A2. Determine the individual ridge points by cutting arrays in x direction for each y channel of the spectrum A2 and evaluating the peak positions in these arrays. (The procedure to determine the peak position is described in the documentation of the command AFPEAK.) Adapt a smooth line to the peak positions with smooth parameter value 0.1 and write the coordinates of the ridge line to the destination analyzer “RIDGE”.

ARIDGE NZFRA / DIM(2) MEAN INTER DEST(NMEAN)
Determine the mean neutron number of the isotopic distributions produced in the reaction $^{238}U + ^{208}Pb$ at 1 A GeV.
The analyzer NZFRA and the resulting ridge line are shown below: