



Utility Bugs: projection

Bugs

1. *PROJECTION and REGION-PROJECTION do not recognize the parameters by number.*

They must be specified as `model_name.param_name`, not `model_name.param_number` (e.g. `PROJECTION poly.c0` vs `PROJECTION poly.1`).

2. *Projection fails with "Error: LM Error has been detected."*

```
sherpa> projection
Error: LM Error has been detected.
-- The LM alpha matrix is null.
-- ==> bad parameter value choices.
```

One cause is parameter step size at parameter bounds. For instance, the default step size for a Gaussian fwhm is 0.01 times the current value; if the value hits its hard minimum (approximately 10^{-38}) during projection, then the step size will not be large enough to cause the statistic to change, leading to a null alpha matrix.

Workaround:

S-Lang could be used to avoid this problem:

```
sherpa> tryone = run_proj(["pow1.ampl"])
sherpa> print(tryone)
NULL
```

If NULL, then change the optimization method to powell and try again:

```
sherpa> () = sherpa_eval("method powell")
sherpa> sherpa.proj.fast = 0
sherpa> trytwo = run_proj(["pow1.ampl"]);
Projection complete for parameter: pow1.ampl

Computed for sherpa.proj.sigma = 1.6
-----
Parameter Name Best-Fit Lower Bound Upper Bound
-----
pow1.ampl 5.33519e-06 -1.24361e-06 +1.24361e-06

sherpa> print(trytwo[0])
name = pow1.ampl
val = 5.33519e-06
vlo = 4.09157e-06
vhi = 6.5788e-06
sigma = 1.6
```

Then change back to LM, if desired.

Utility Bugs: projection – CIAO 3.4

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URL:
http://cxc.harvard.edu/sherpa3.4/bugs/ut_projection.html
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