Relativistic R-Matrix LRF=7 clarification

Formats proposal

- Proposal
  - Clarification of `MF=2, MT=151, LRU=1, LRF=7, KRM=4*, KRL`
    - Specified in Sec. (2.2.1.6) of the ENDF-6 manual (p.69)
      - `LRF=7` R-Matrix Limited (RML)
    - Currently only `KRL=0` is well defined
- Purpose
  - Clarify meaning of relativistic R-matrix parameter `KRL>0`
    - **KRL** Flag is zero for non-relativistic kinematics, 1 for relativistic.
  - Extend possible values to `KRL>1`
  - Permits dissemination of EDA R-matrix parameters `KRL≠0` in `MF=2`
- Points of note
  - `KRL≠0` is currently ***unused***
    - *`KRM=4` is also unused; proposal unchanged if not
  - `KRL>0` must be clarified – many relativistic parametrizations possible

Relativistic RML R-Matrix Parametrization Proposed form KRL=1

- `KRL > 0` relativisitic parametrization
  - Many possible relativistic forms; here: `KRL = 1`
  - Extensions beyond the present form for `KRL > 1`

$$R_{c'c} = \sum_{\lambda=1}^{N_\lambda} \frac{\gamma_{\lambda,c'}\gamma_{\lambda,c}}{E_\lambda - E(s)},$$

```
[MAT,2,151/ 0.0,     0.0,      0,      NRS,    6*NX,      NX/
              ER_1,   GAM_1,1,   GAM_2,1,    GAM_3,1,   GAM_4,1,   GAM_5,1,
            GAM_6,1, ------------------------ GAM_NCH,1,
              ER_2,   GAM_1,2,   GAM_2,2,    GAM_3,2,   GAM_4,2,   GAM_5,2,
            GAM_6,2, ------------------------ GAM_NCH,2,
             ------------------------------------------
          ER_NRS, GAM_1,NRS, GAM_2,NRS, GAM_3,NRS, GAM_4,NRS, GAM_5,NRS,
        GAM_6,NRS, ---------------------- GAM_NCH,NRS          ]LIST
```

$$E(s) = \frac{s - m_{c_0}^2}{2m_{c_0}}$$

$$m_{c_0} = m_{c_0,1} + m_{c_0,2}$$

NB: Specific to `KRL = 1`;
c_0 reference (first) particle-pair

Kinematics:

$$s = (p^\mu_{c,\mathrm{proj}} + p^\mu_{c,\mathrm{targ}})^2 = m_c^2 + 2m_{c,2}E_c$$

$$E_c = \sqrt{|\mathbf{p}_{c,\mathrm{proj}}|^2 + m^2_{c,\mathrm{proj}}} - m_{c,\mathrm{proj}}$$

$$E_{c'} = \frac{1}{m_{c',\mathrm{targ}}}\left[m_{c,\mathrm{targ}}E_c + \overline{m}_{c,c'}Q_{c,c'}\right]$$

$$\overline{m}_{c,c'} = \frac{1}{2}\left(m_c + m_{c'}\right),\ Q_{c,c'} = m_c - m_{c'}$$