



National geodetic datum LURES / LUREF

The Luxembourgish national reference system is named LURES (LUXembourg REference System). The geodetic triangulation of Luxembourg in 1930 is considered the first realization of LURES, called LUREF (LUXembourg REference Frame). In this process, following parameters were adopted:

- Ellipsoid: Hayford International
- Semi-major Axis : 6378388 m
- Flattening 1/f: 1/297
- Fundamental Point (Laplaxe-point): Habay-la-Neuve (Belgium)

Nowadays, LUREF is realized by the SPSLux GNSS reference stations. Those stations are managed in the European ETRS89 reference system. In order to compute cartesian LUREF coordinates, the following transformation (ETRF2000toLUREF) has to be applied:

ETRF2000toLUREF Transformation:

1. Molodensky-Badekas:

Rotation origin:

X0 [m]	4103620.3891
YO [m]	440486.4152
ZO [m]	4846923.4466

N°	parameter	value
1	translation dX	265.8979 m
2	translation dY	- 76.9761 m
3	translation dZ	- 20.2504 m
4	rotation X	- 0.43335 "
5	rotation Y	- 3.11447 "
6	rotation Z	2.63637 "
7	scale	- 0.4752 ppm

2. Bursa-Wolf:

N°	parameter	value
1	translation dX	189.0330 m
2	translation dY	- 14.1335 m
3	translation dZ	43.0901 m
4	rotation X	- 0.43331 "
5	rotation Y	- 3.11448 "
6	rotation Z	2.63636 "
7	scale	- 0.4752 ppm

Molodensky-Badekas and Bursa-Wolf transformation models deliver equal results, as both are seven parameters Helmert transformations.