

## CTF3 and CLIC main parameters for photo-injector studies

|                         | Unit  | DRIVE BEAM |                 |               | MAIN BEAM |                                |   |
|-------------------------|-------|------------|-----------------|---------------|-----------|--------------------------------|---|
|                         |       | CTF-3      | CLIC<br>0.5 TeV | CLIC<br>3 TeV | CTF 3     | CLIC 3<br>e <sup>-</sup> (pol) | CLIC 3<br>e <sup>-</sup> for e <sup>+</sup> |
| μ pulse charge          | nC    | 2.4        | 11.7            | 17.5          | 0.6       | 1                              | 3.2   |
| Pulse width (FWHH)      | ps    | 10         | 12              | 12            | 8         | 37                             | 37  |
| Peak current            | A     | 240        | 975             | 1450          | 75        | 27                             | 86  |
| Number of μ pulses      | -     | 2145       | 10720           | 42880         | 1-40      | 154                            | 154   |
| Distance between pulses | ns    | 0.666      | 2.13            | 2.13          | 0.666     | 0.666                          | 0.666                                       |
| Macro pulse duration    | μs    | 1.4        | 23              | 92            | < 0.027   | 0.103                          | 0.103                                       |
| Macro pulse charge      | μC    | 5.2        | 125             | 750           | < 0.024   | 0.154                          | 0.5   |
| Charge stability        | % rms | < 0.5      | 0.1             | 0.1           | ?         | ?                              | ?   |
| Repetition rate         | Hz    | 5          | 200             | 100           | 5         | 100                            | 100   |
| Mean current            | mA    | 0.026      | 25              | 75            | < 0.12μA  | 0.015                          | 0.05  |

|                                      |                   |                    |                    |                    |                    |        |                    |
|--------------------------------------|-------------------|--------------------|--------------------|--------------------|--------------------|--------|--------------------|
| Photo cathode                        | -                 | Cs <sub>2</sub> Te | Cs <sub>2</sub> Te | Cs <sub>2</sub> Te | Cs <sub>2</sub> Te | GaAs   | Cs <sub>2</sub> Te |
| Working wavelength λ                 | nm                | < 270              | < 270              | < 270              | < 270              | 864    | < 270              |
| Minimum QE @ λ                       | %                 | 1.5                | 1.5                | 1.5                | 0.3                | 0.2    | 0.3                |
| Minimum lifetime @ QE <sub>min</sub> | h                 | 100                | 24                 | 24                 | 100                | 24     | 100                |
| Total shot number during lifetime    | x 10 <sup>9</sup> | 3.9                | 185                | 371                | < 0.072            | 1.3    | 1.3                |
| Photo cathode produced charge        | C                 | 10                 | 2.2 k              | 6.5 k              | < 0.04             | 1.3    | 4.2                |
| Laser energy at the cath. / Mp       | mJ                | 1.6                | 39                 | 233                | < 0.008            | 0.015  | 0.16               |
| Laser power at the cathode           | W                 | 0.008              | 7.8                | 23.3               | < 40 μW            | 1.5 mW | 16 mW              |