$Z\,\gamma^*$ with EXCALIBUR

Cross section for the process

$$e^+(1)\ e^-(2) \to \mu^-(3)\ \mu^+(4)\ \ d\,(5)\ \bar{d}\,(6)$$

- Input parameters as in the 4f proposal, ISR included
- G_F renormalization scheme
- $m_d = 47$ MeV
- Massless matrix element and phase space

Cuts:

- $E_{vis} > 50$ GeV, $E_{3,4} > 5$ GeV
- $M_{(34)} > 4$ GeV, $M_{(56)} > 4\ m_d^2$
- $M_{(34)}$ or $M_{(56)}$ in the interval $(m_Z \pm 10)$ GeV

Results (in pb) obtained by using leading fermionic loop corrections (namely the leading real part of the fermion-loop approach), to take into account the running of α_{em} on a diagram basis:

$\sqrt{s}$	without corrections	with corrections
183	0.02246 ± 0.00004	0.02248 ± 0.00003
189	0.02118 ± 0.00004	0.02122 ± 0.00004
200	0.01945 ± 0.00003	0.01949 ± 0.00003

Not significant deviations observed (also m_t contributions are present).

In the table the effective value $m_t \sim 147$ GeV has been used, that reproduces the correct running of α_{em}.

- THE ABOVE RESULTS SHOULD BE CROSS-CHECKED WITH CODES THAT IMPLEMENT THE FULL FERMION LOOP CORRECTIONS.