Future Reach / Lower limit on quark $\sigma$

- **CDMS Latest Feb 2000**
- Now limited by shallow site

- **CDMS II** 5 kg Ge at Soudan
- **ZEPLIN** 6 kg Xe at Boulby

- ~1 event/kg/d

- 0 < $M_3$ < 1000 GeV
- 95 < $m_0$ < 1000 GeV
- -3000 < $A_0$ < 3000 GeV
- 1.8 < tan($\beta$) < 25
- sign of $\mu$
- 0.025 < $\Omega h^2$ < 1

- ~1 event/kg/yr

- ~1 event/kg/yr

- mSUGRA & Naturalness

- Shaded regions: Unconstrained MSSM

- Mandic, Gondolo, Murayama, Pierce

- CryoArray 1 tonne event by event discrim.

- ~1 event/100 kg/yr

- see also Ellis et al. hep-ph0007113

- Genius 100 kg Ge in 5 m tank LN2

- Genius 100 kg Ge in 14 m tank LN2
Direct Detection: History & Future

90% CL Limit on Cross section for 60 GeV WIMP (scalar coupling)

~1 event kg\(^{-1}\) day\(^{-1}\)

~1 event kg\(^{-1}\) yr\(^{-1}\)

~1 event 100 kg\(^{-1}\) yr\(^{-1}\)

[\(m = ??\) GeV - if significantly better limit obtained at different mass]

Not meant to be a complete list - see http://dmtools.berkeley.edu