Weak neutral currents

- Processes due to $Z$ exchange
- List important cases, difficulties
- Important in establishing Weinberg-Salam theory:
  - Measure $\theta_W$ from low-energy processes
  - Predict $m_W$ and $m_Z$
  - Detect $W$ (and then $Z$)
- 1981: $\sin^2 \theta_W = 0.23 \pm 0.01$, gives $m_w = 82 \pm 2$ GeV. [Llewellyn Smith & Wheater, Phys. Lett. 105B, 486 (1981)]
- 1983: Measure $m_W = 81 \pm 5$ GeV. [Arnison et al. (UA1), Phys. Lett. 122B, 103 (1983)]