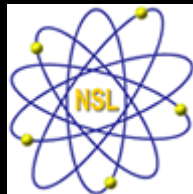
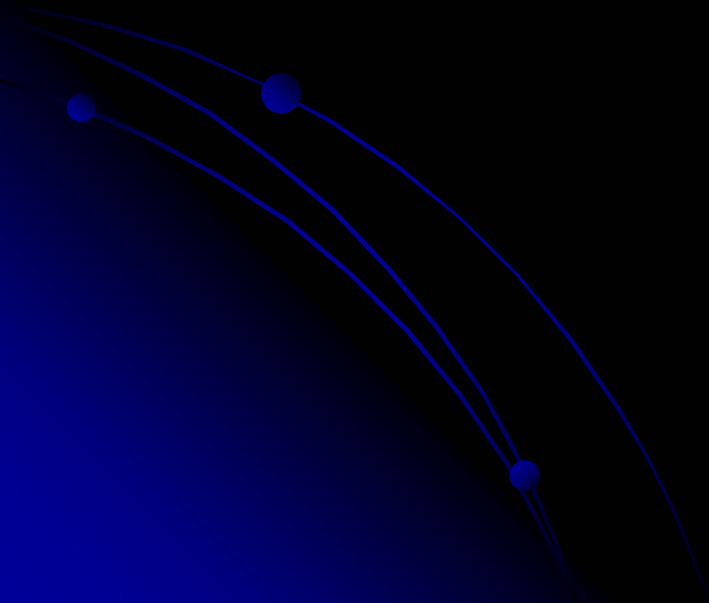


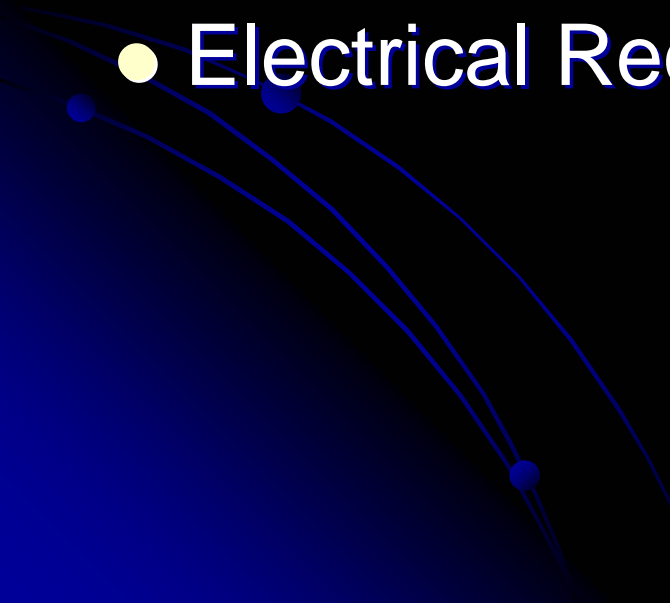


St. George Infrastructure

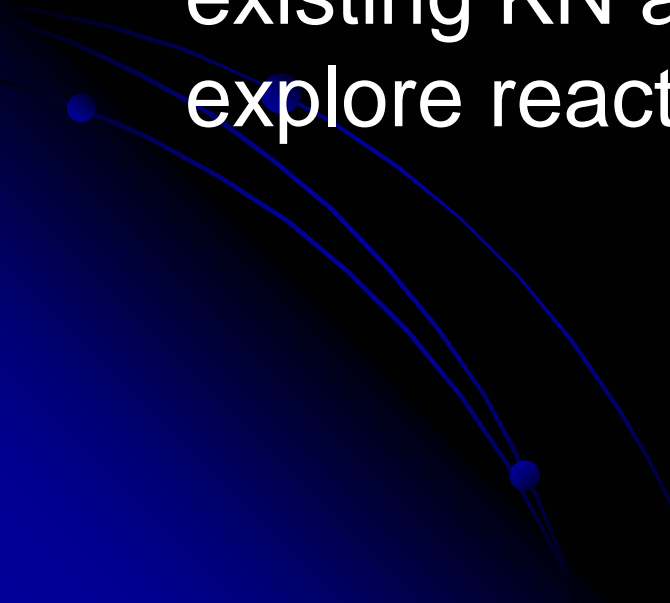
1/30/2006



Outline

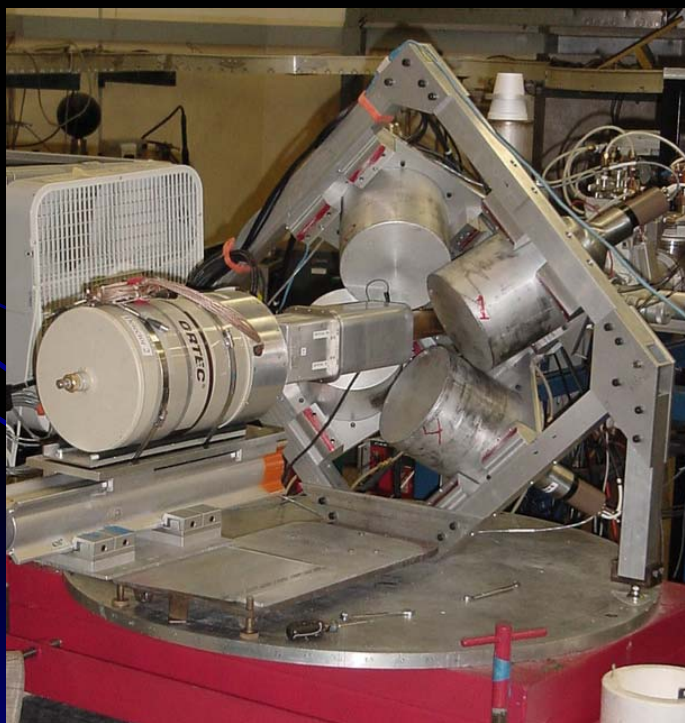
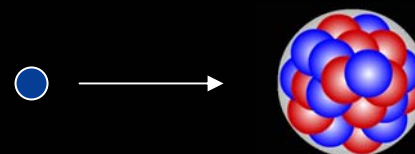
- Overview of St. George
 - The impact on the floorplan
 - Cooling Water Requirements
 - Air Temperature Requirements
 - Electrical Requirements
- 

Overview of St. George

- **ST**rong **G**radient **E**lectromagnetic **O**nline
Recoil separator for capture **G**amma ray
Experiments
 - New tool which will be used with the existing KN accelerator in the NSL to explore reactions in a new way
- 

Ways of Studying Reactions

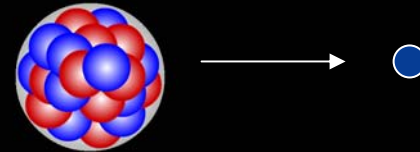
- Standard
 - Heavy target, light beam



Ways of Studying Reactions cont.

- Inverse Kinematics

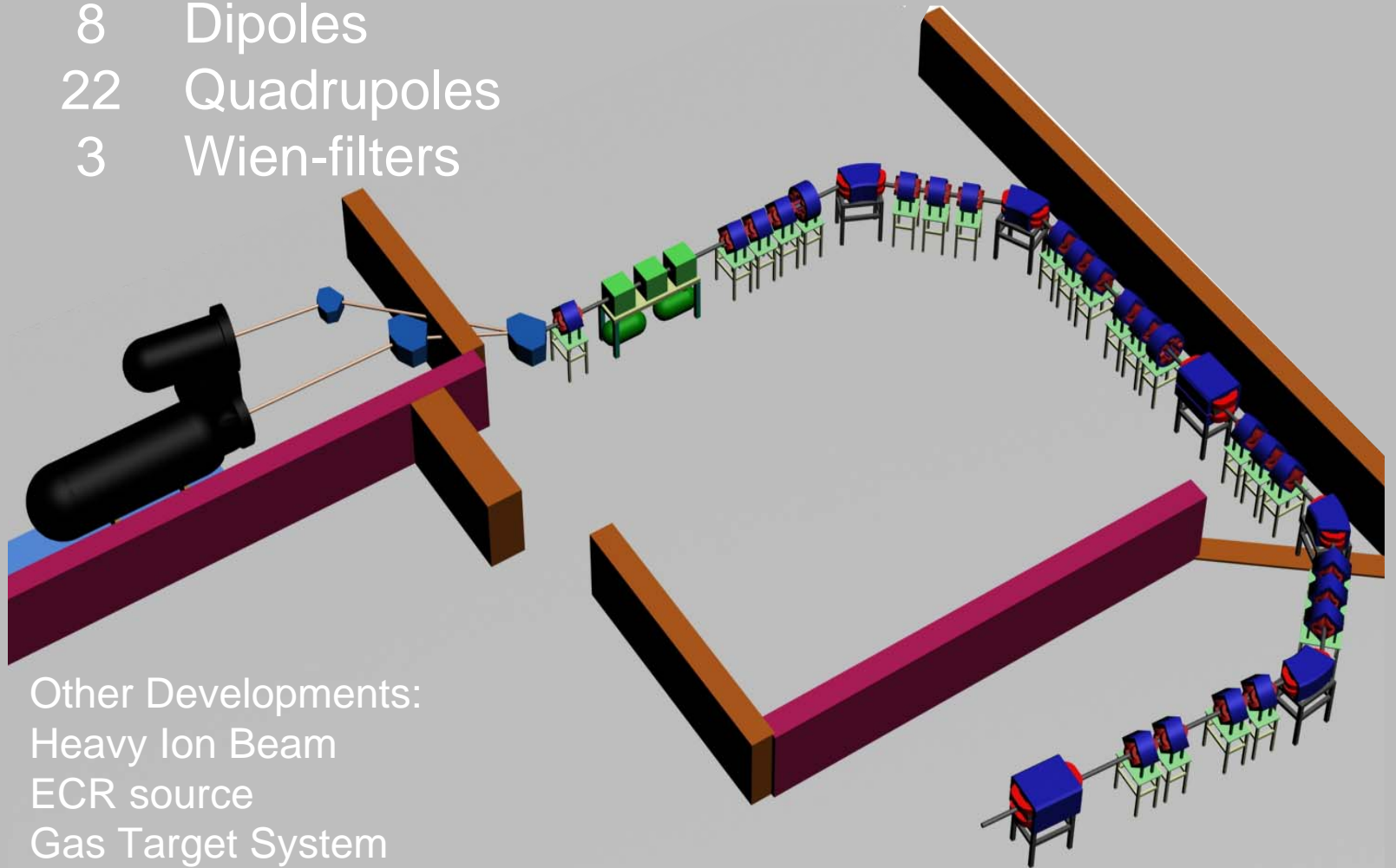
- Heavy Beam, light target



- Reaction products have a lot of momentum
- Use the magnetic and electric fields of a Recoil Separator to isolate and measure these products
- Significantly less background than “standard” setup but it takes much more room....

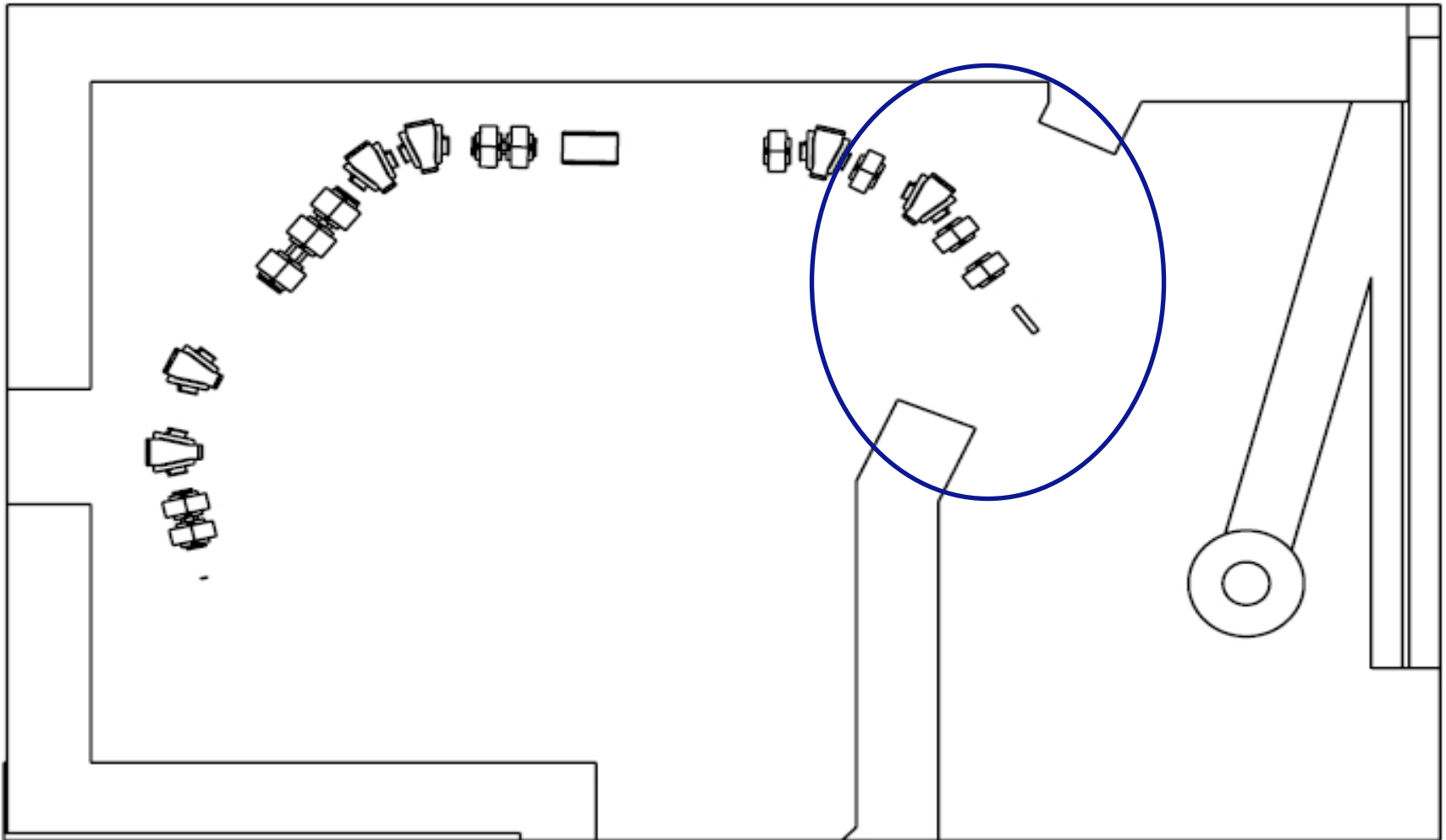
Schematic View of St. George

- 8 Dipoles
- 22 Quadrupoles
- 3 Wien-filters



Other Developments:
Heavy Ion Beam
ECR source
Gas Target System

Latest Floor plan

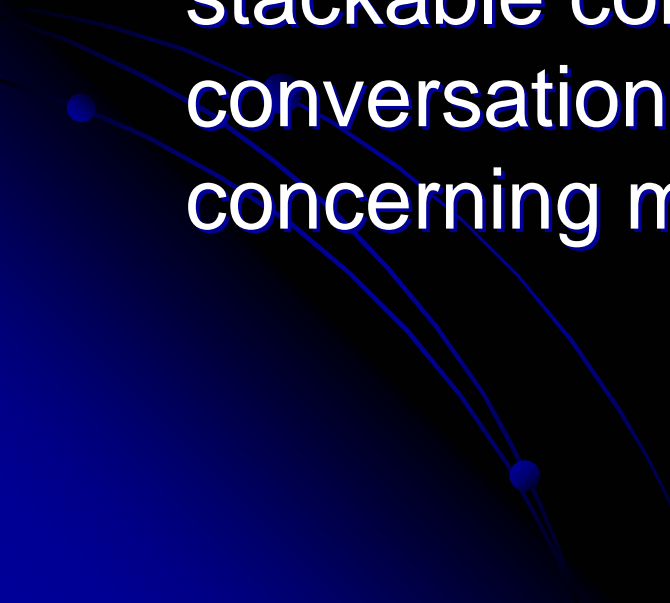


Minimum Requirements

Wall Modifications

- Need 8 of the 3'x2'x4.5' concrete blocks removed, replaced with standard concrete blocks, stacked without mortar so we can move as necessary similar to the current east wall of the east target room.
- Each block estimated at 2 tons, 5 ton cranes are installed in target rooms.

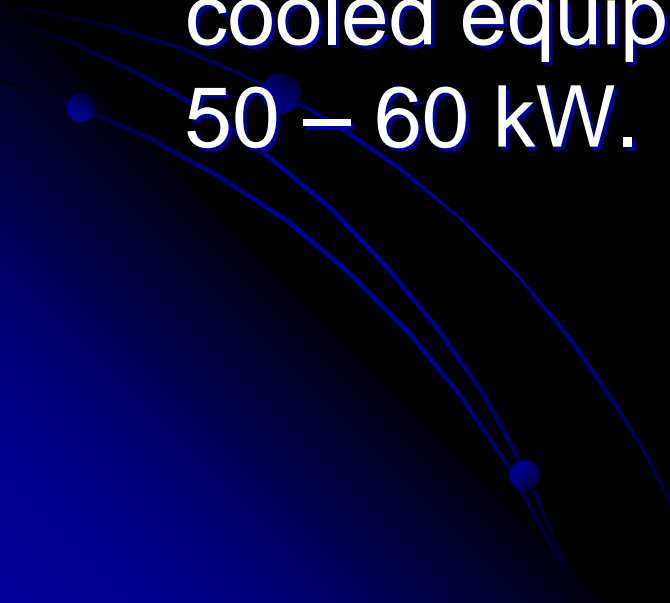
New Shielding Wall

- Want a modular wall which provides flexibility for future modifications.
 - Possibilities include Pb-lined cubical walls plus refillable water containers or stackable concrete blocks. In conversation with Radiation Safety concerning minimum thicknesses required.
- 

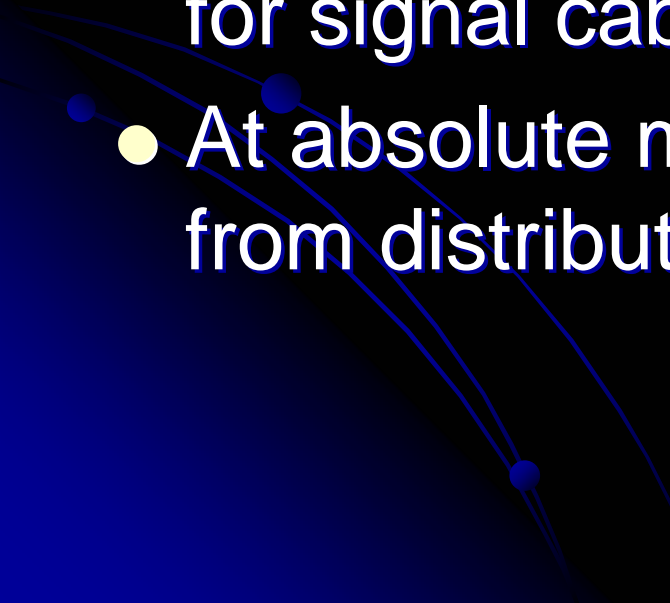
Water Cooling

- Input Temperature 65° F
- Return Temperature 75 - 80° F
- 200 GPM total, each component requires 5 GPM
- Reverse Osmosis, De-ionized, de-mineralized
- Connections inside room can be done by lab personnel once supply and return lines are provided inside target room at an accessible location if absolutely necessary.
- Better option is water lines along beamline with 10 access points to which devices will be connected.

Air Cooling

- Room Temperature must be maintained to within a few degrees.
 - Current system doesn't do that now.
 - Power consumption of new non water cooled equipment will be approximately 50 – 60 kW.
- 

Electrical Power

- Total power needed 200 kW
 - Best solution is have power distributed along beamline in devoted cable tray
 - Separate cable tray parallel to power tray for signal cables
 - At absolute minimum, we can wire things from distribution panel
- 

Summary of Minimum Requirements

- 8 large concrete blocks converted to small ones
- Modular shielding wall needed
- 200 gpm DI water system, 65° F input, temp. rise of 10 - 15° F
- Stable Air Temperature