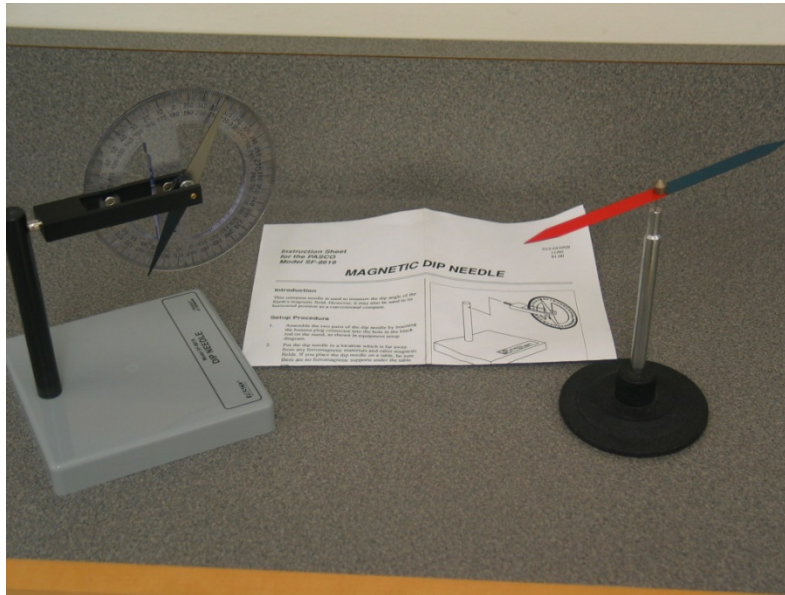


Dip Needle and Compass



Purpose: To demonstrate that a compass, as commonly used, shows only the horizontal component of Earth's magnetic field. The dip needle shows that the magnetic poles originate deep within Earth, not on the surface at the geographic North and South Poles.

Location: Room 146; shelf M4

It is recommended that you use the back ledge by the windows for compasses and dip needles to avoid magnetic fields produced by objects in the building. When placed on a level surface, the compass needle should align itself so the north (red) end points north and the south (blue) end points south. A compass tells us that the geographical "north pole" is actually Earth's magnetic south pole.

With the dip needle and protractor in a level (i.e. horizontal) plane, let it align with Earth's field just like the regular compass needle. Rotate the needle's base so the black holder is parallel with the needle. Now, rotate the protractor and black holder 90 degrees about their axis, so the plane of the dip needle is perpendicular to the table, as shown in the above picture. The north end (blue) of the needle now points downward, at about 60-70 degrees below horizontal. This is the direction and dip angle of earth's magnetic field.