First Patient Treatment with Heavy Ions at GSI, G. KRAFT for the German Heavy-Ion Collaboration, GSI Darmstadt - Beams of heavy-charged particles of high energy like carbon ions are superior to any other type of radiation conventionally used in external radiotherapy. In contrast to photons and neutrons, the dose for the ions increases with penetration depth and culminates in a sharp maximum at the end of range. Due to the microscopic track structure this region of high energy deposition has an increased biological efficiency. In addition, a small amount of positron emitting isotopes is produced by the projectile and makes it possible to trace the beam inside the patient's body by PET techniques. At GSI an experimental heavy-ion therapy started with patient treatment. It is based on a totally active beam delivery and a biology-oriented treatment planning system in order to exploit the favourable particle properties to a maximum extent.