HBCU Physics Departments: Barriers and Opportunities

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Barriers for most HBCUs Physics Depts.

- Very few majors (< 15 total)
- Very low annual production of graduates (< 3)
- High failure rate in gatekeeper courses
- Physics majors not sufficiently engaged
- Very low (if any) external funding
- Quarreling faculty members
- Very low scholarly activity
- Heavy teaching loads for Jr. faculty
- Aged-faculty and outdated curriculum
MC Vision 3X

Over the next 5 years, the goal of the Department of Physics & Dual Degree Engineering Program at Morehouse College is to TRIPLE its number of Physics graduates from 15 to 45.
Morehouse Physics & DDEP: We C.A.R.E. Approach

• **Curriculum**
  – Fixed & Flexible course availability based on student input
  – Refresh physics major to reflect viable & known career paths

• **Advisement**
  – Career mentoring (academic, life skills, pipeline, SPS, etc.)

• **Recruitment/Retention/Research/Recommendations**
  – Pre-collegiate summer programs / Faculty high school visits
  – Saturday Academy / Summer Placements (REUs, Interns, etc.)

• **Extras**
  – Graduate School Tours / Special Speakers
  – Town Hall meetings by SPS / Scientific leadership & citizenship
We C.A.R.E.: Curriculum Refreshed & Relevant

PHYSICS CORE
1. Math Physics I
3. EM Theory
4. Quantum Mech.
5. Thermodynamics
Opportunities for Change, Coalition, & Collaboration

• **Change**
  – Productivity-centered leadership (strategic plan, vision, etc.)
  – Early student involvement (research, tutoring, SPS, etc.)
  – Develop student retention strategies (tutorials, faculty rotation, math skills, etc.)
  – Determine department’s strength and build on it
  – Engage faculty in all areas (Research, Teaching, Service & Administration)
  – Refresh the curriculum (3 R’s: Reduce, Rotate, & Relate)

• **Coalition**
  – Encourage band of small programs to form local/regional exchanges
  – Develop a “Adopt-a-Physics dept” program
  – Perform “critical mass” and “referral” recruitment

• **Collaboration**
  – Promote strategic partnerships among HBCUs and major institutions
  – Support annual conferences of NSBP & NSHP