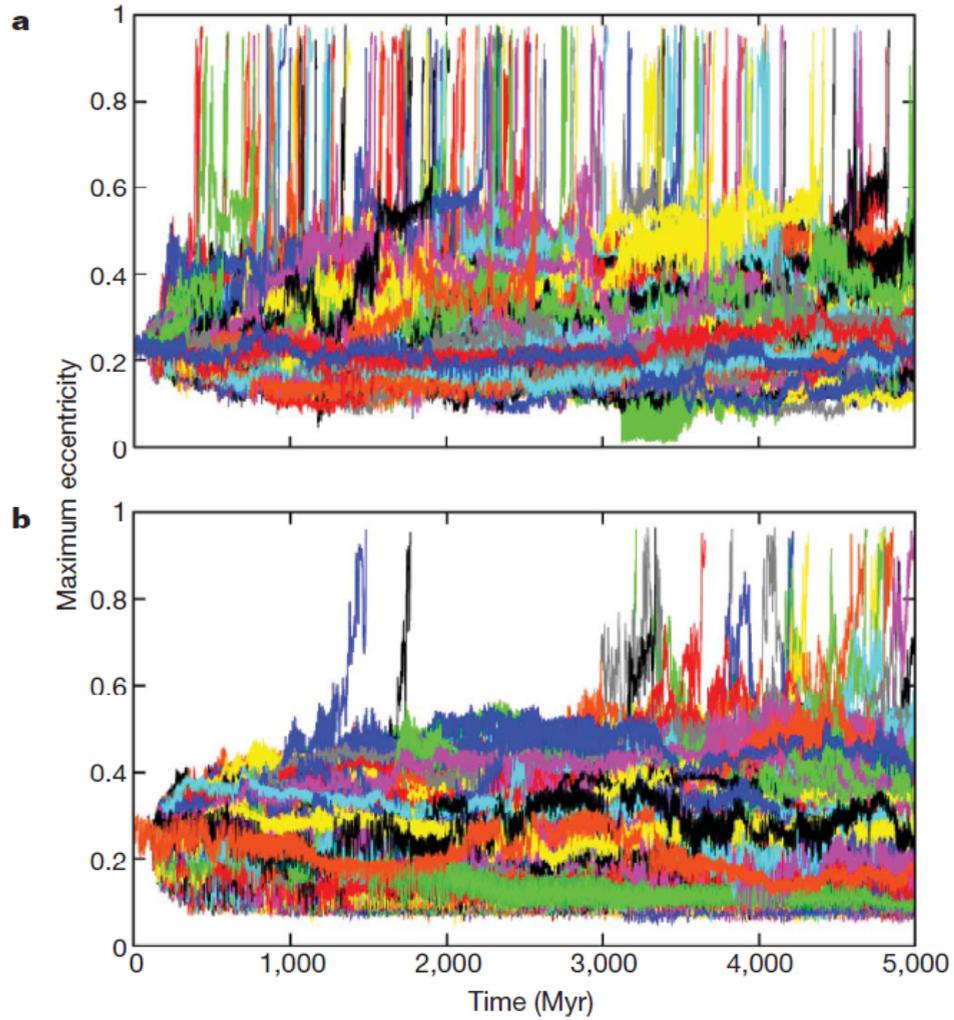
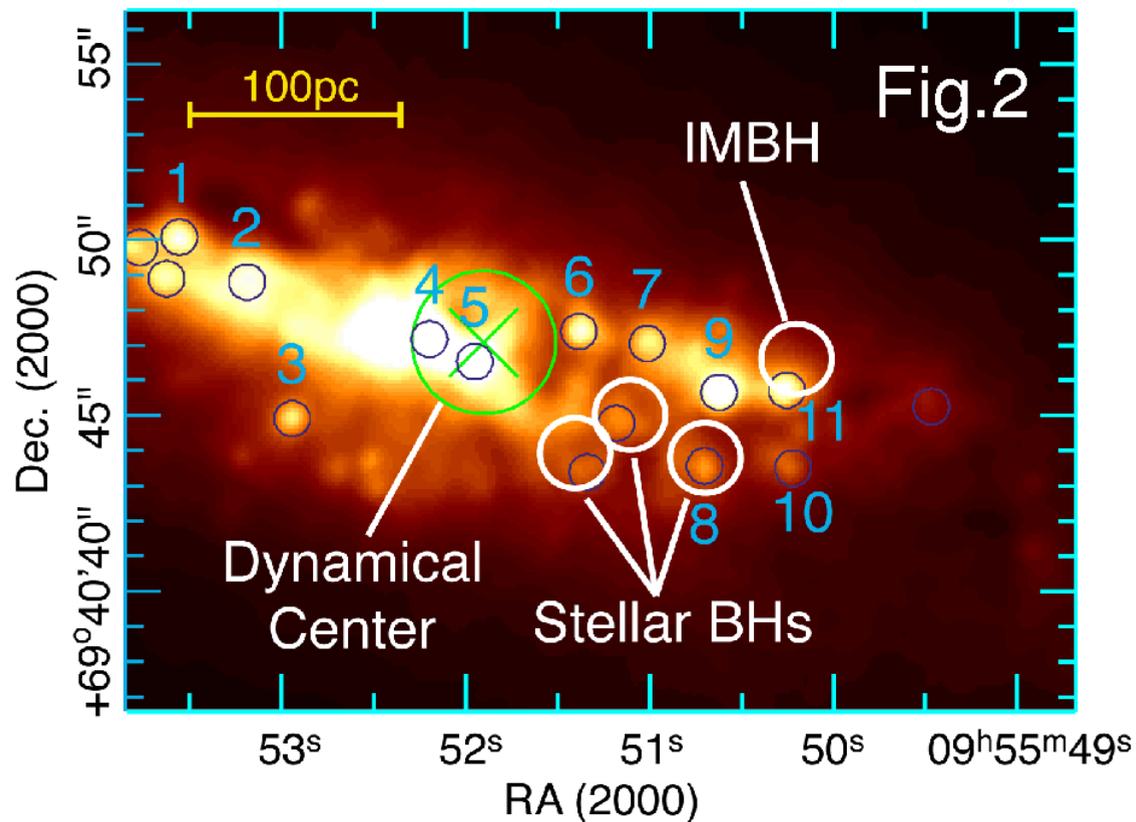


Laskar and Gastineau 2009

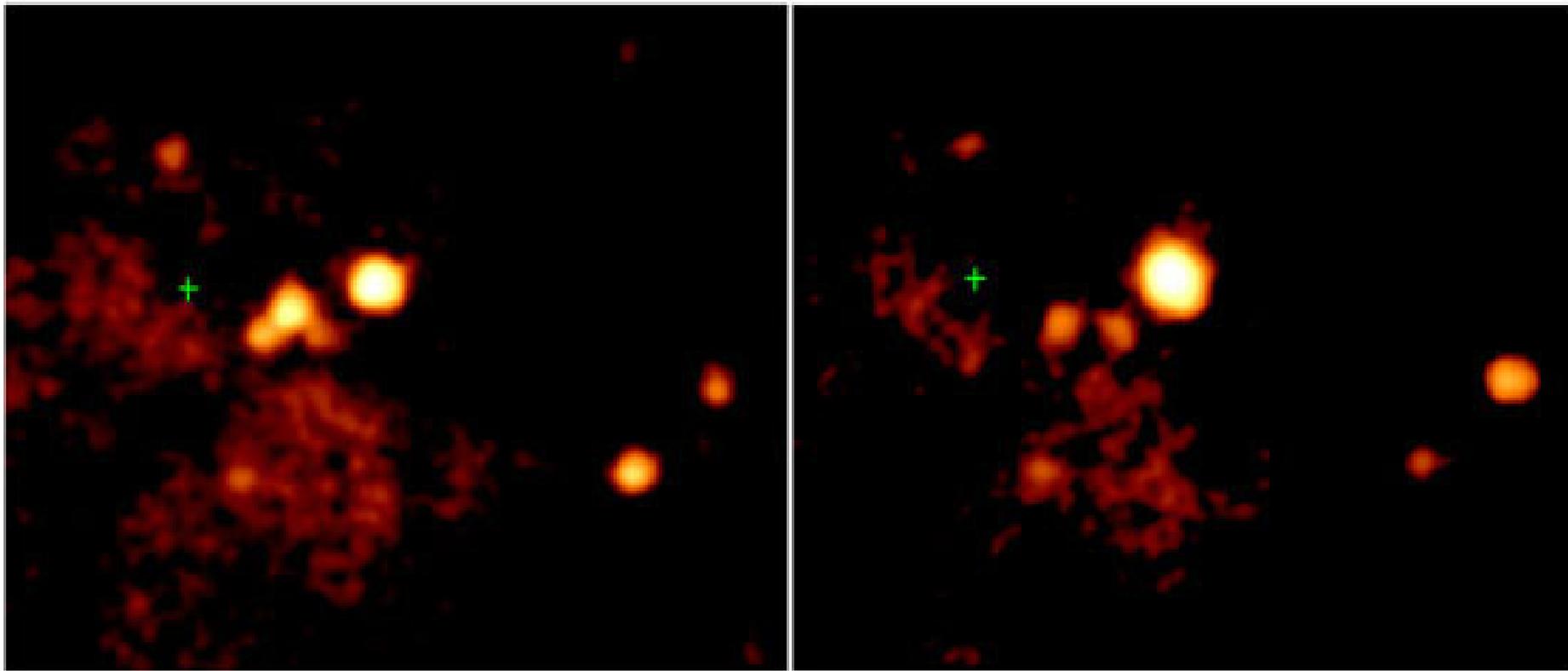


銀河中心



近傍の銀河 M82 の中心部の「すばる」望遠鏡による写真

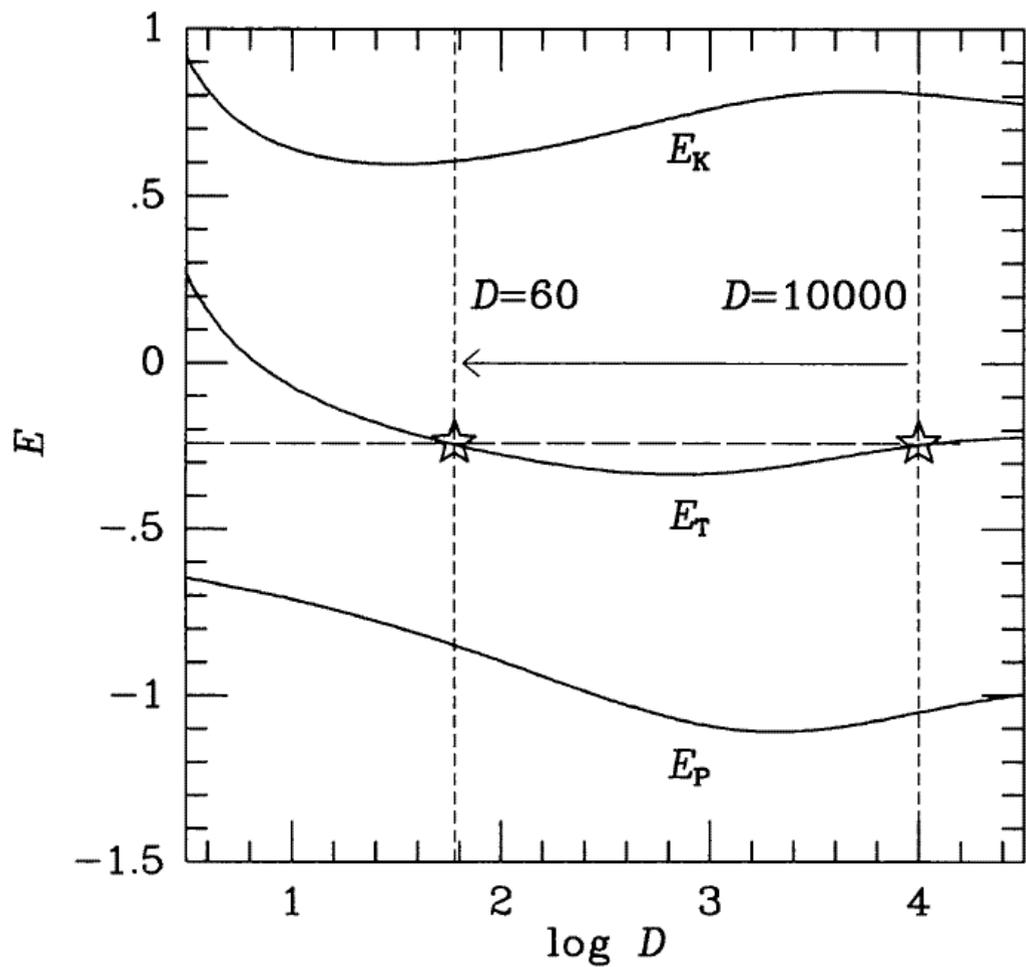
X線では



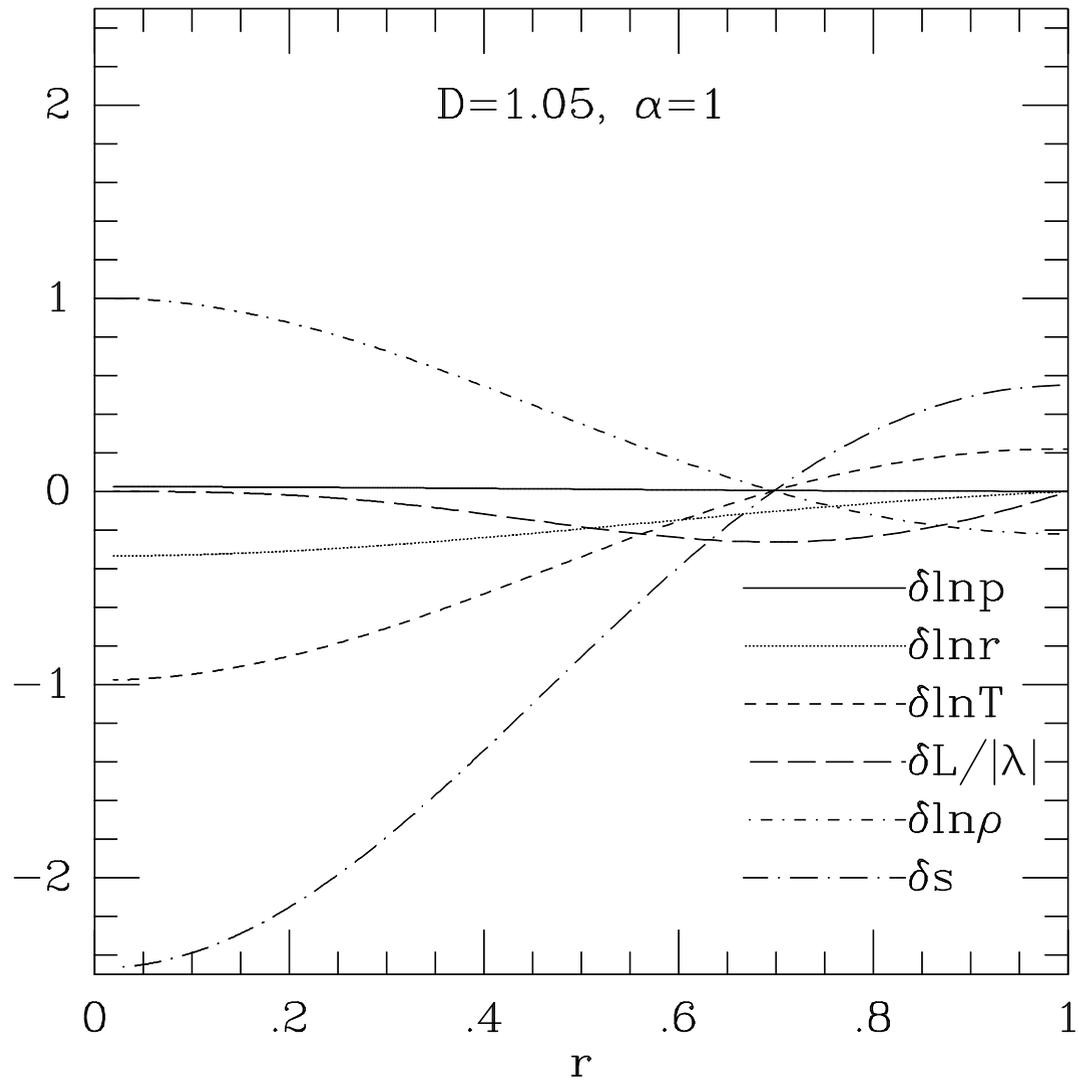
NASA Chandra X線衛星による写真

こういったところではいったい何がおきているか？

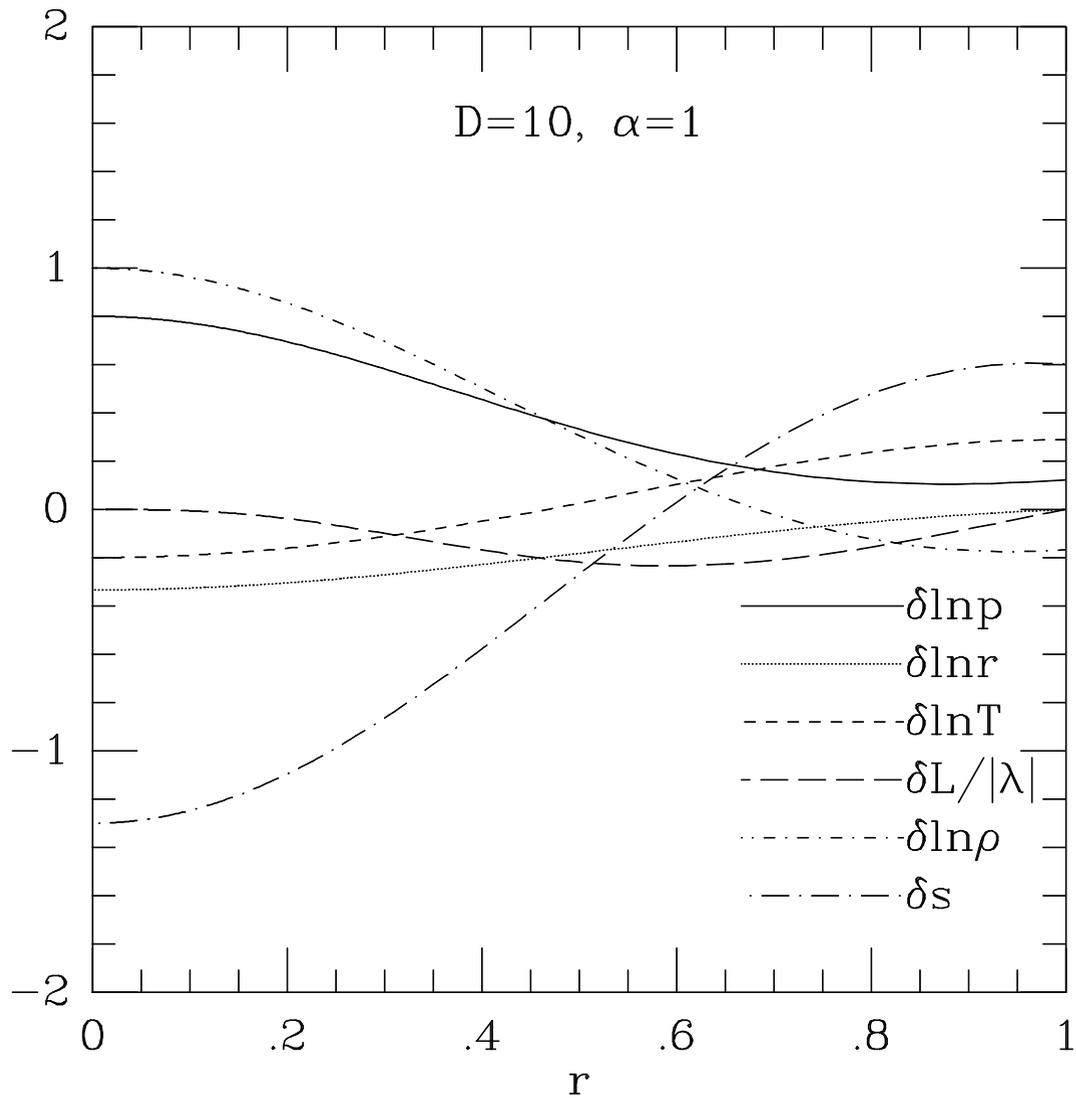
エネルギーの下限



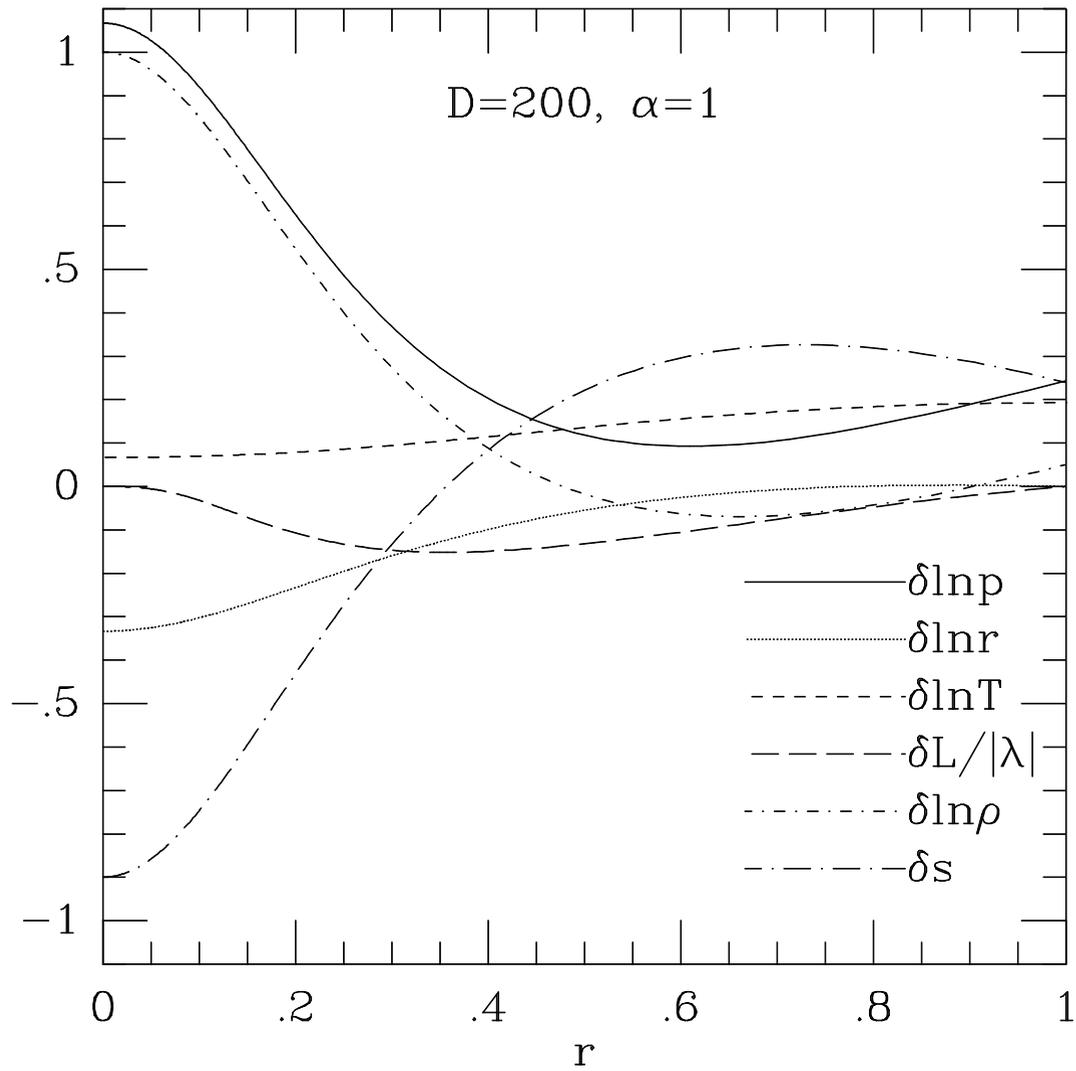
安定な場合, $D = 1.05$



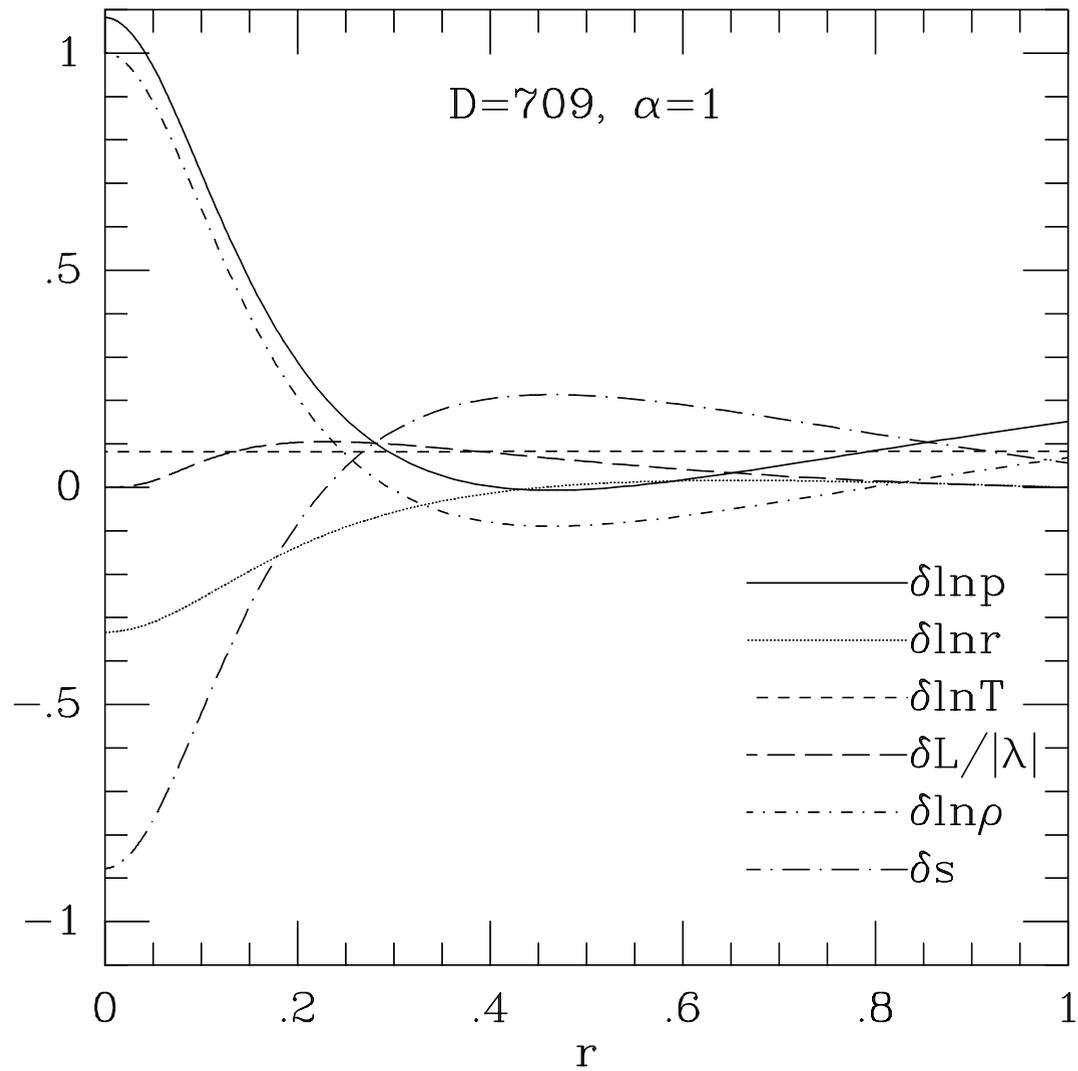
安定な場合 (2), $D = 10$



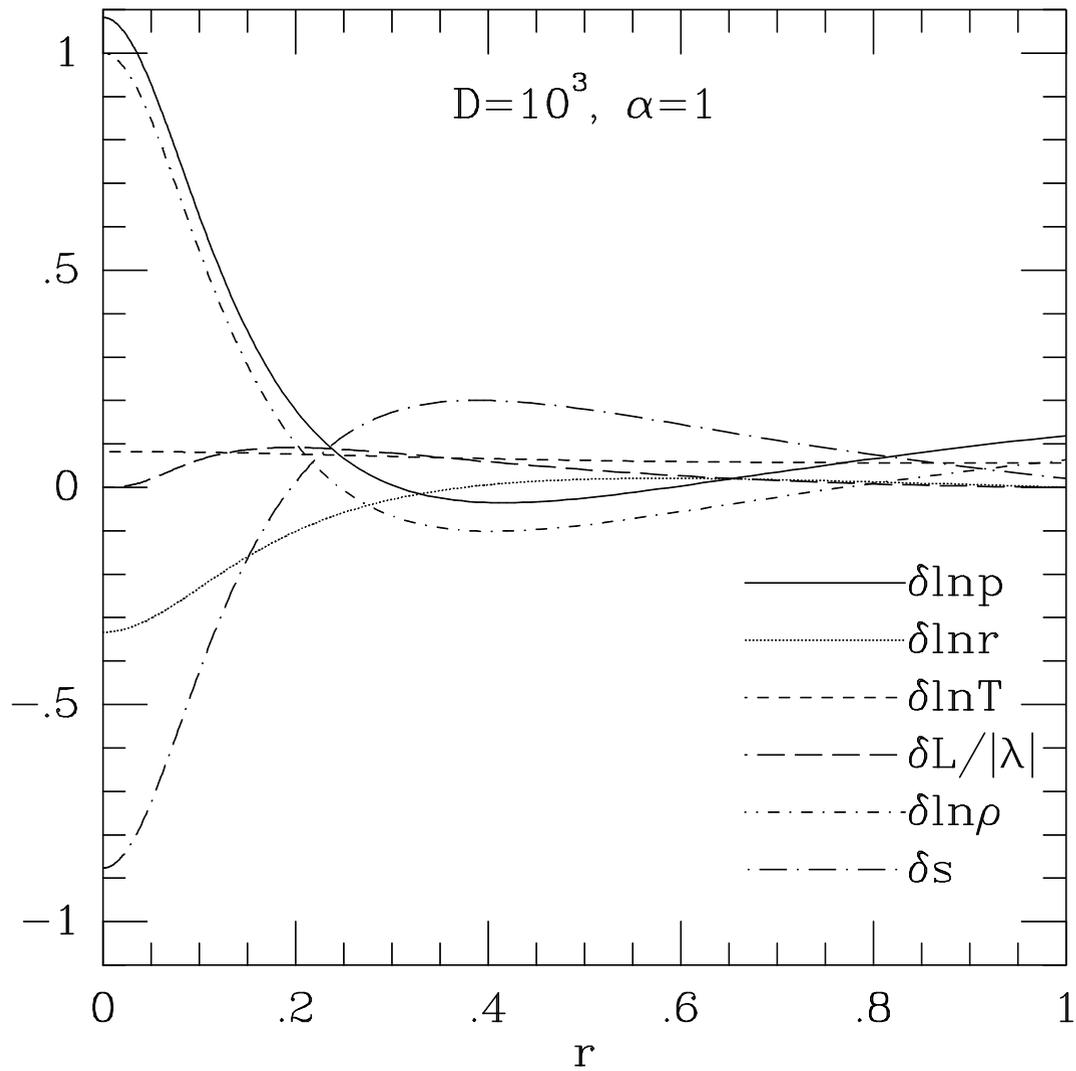
安定な場合 (3), $D = 100$



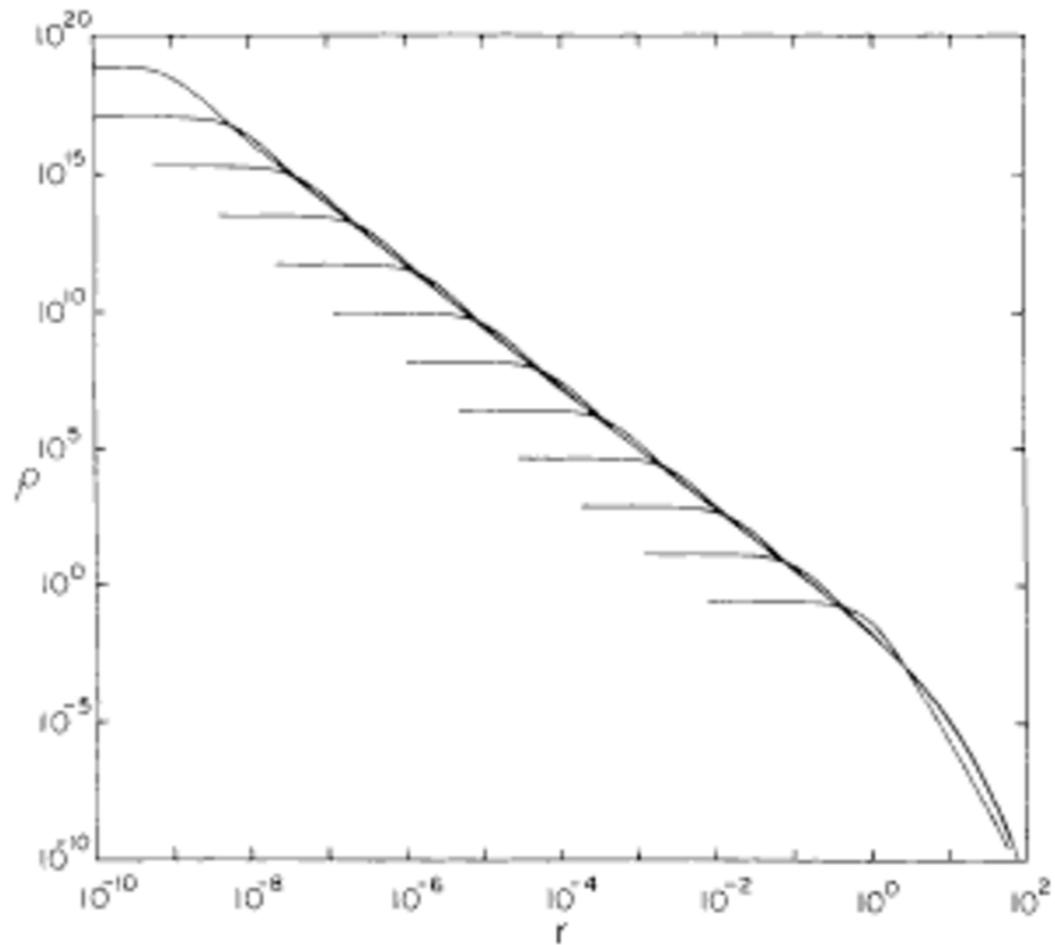
中立安定, $D = 709$



不安定, $D = 1000$



自己相似解



重力熱力学的振動

