AST 381, HW 3

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Part 1

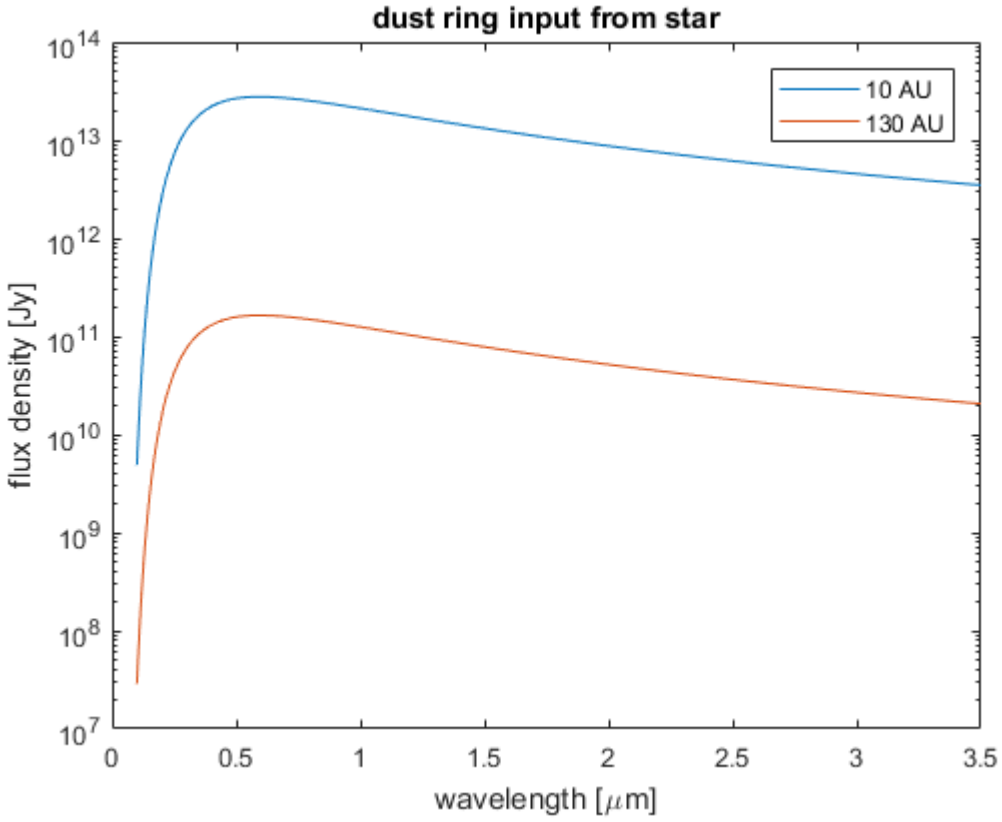

Figure 1: Stellar output at orbital distance

Part 2

The power absorbed by the dust ring in Watts

	Orbital radius	
Grain size	10 AU	130 AU
0.1 μm	1.463×10^{-12}	8.656×10^{-15}
1 μm	6.246×10^{-10}	3.696×10^{-12}
10 μm	6.602×10^{-8}	3.907×10^{-10}
1 mm	7.121×10^{-4}	4.214×10^{-6}

Part 3

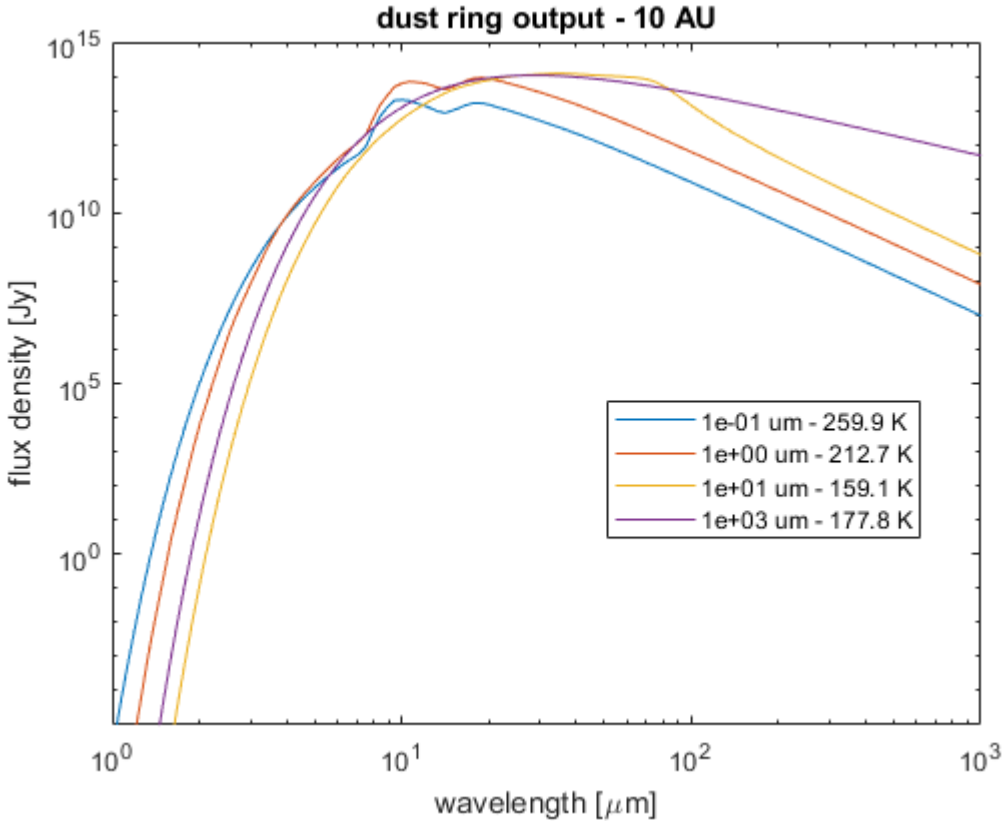

Figure 2: Dust ring output at 10 AU

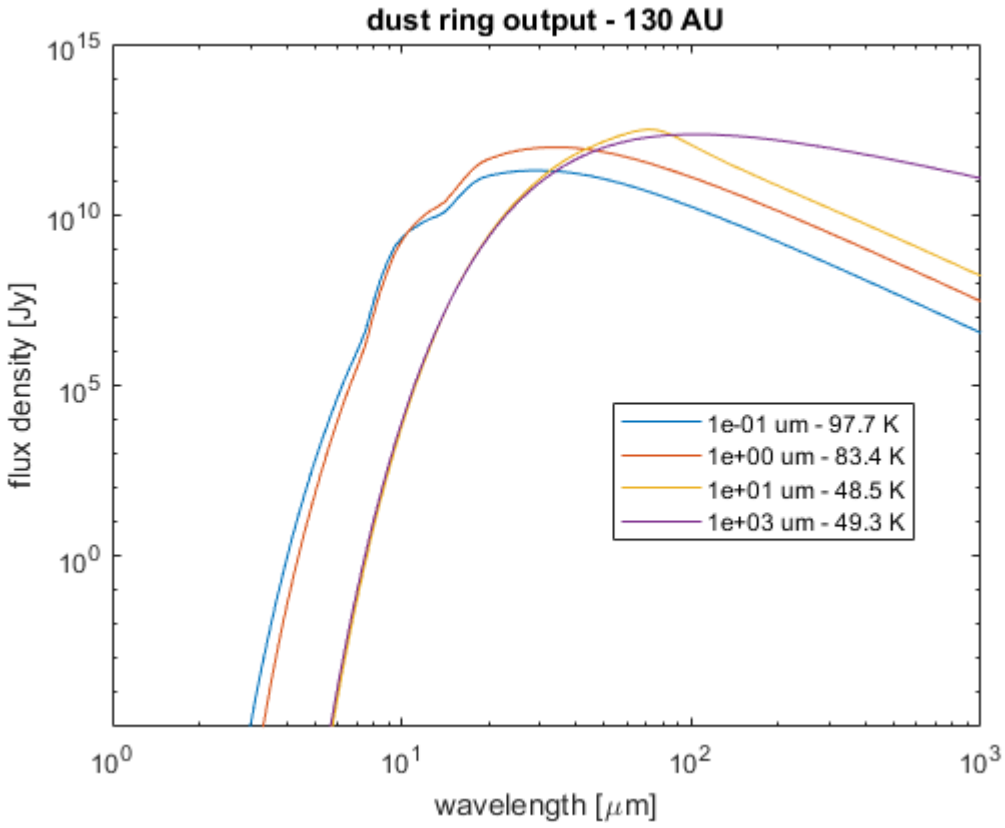

Figure 3: Dust ring output at 130 AU

Part 4

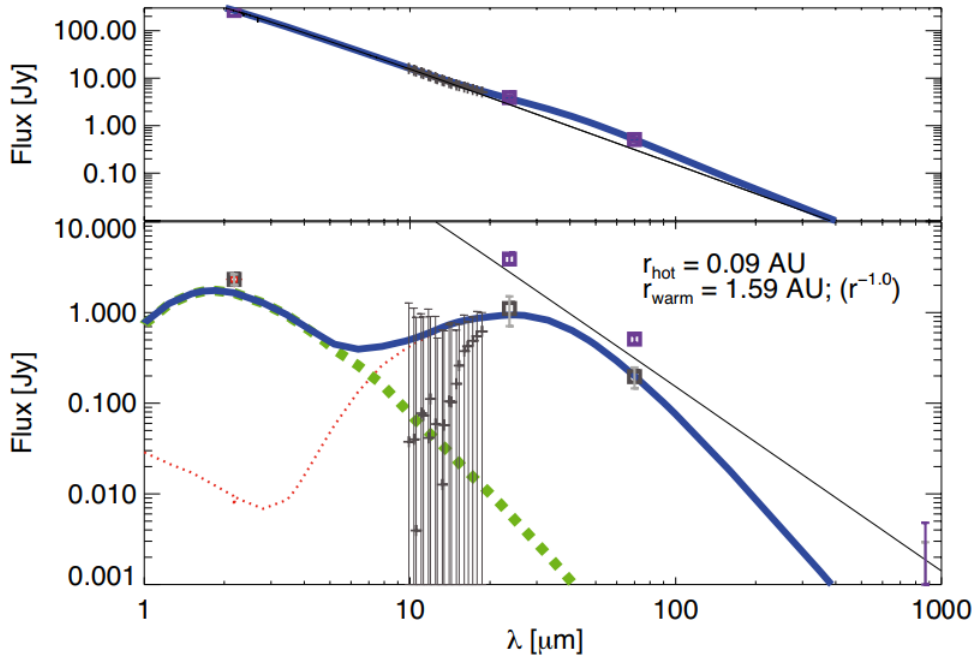

Figure 4: SED of Fomalhaut, green: hot ring, red: warm belt, blue: total (Libreton et al., 2013)

Part 5

	10 AU		130 AU	
Grain size	RP	P-R	RP	P-R
0.1 μm	4.880 $\times 10^{-21}$	2.124×10^{-25}	2.887×10^{-23}	3.486×10^{-28}
1 μ m	2.083×10^{-18}	9.069×10^{-23}	1.233×10^{-20}	1.488×10^{-25}
10 μ m	2.202×10^{-16}	9.587×10^{-21}	1.303×10^{-18}	1.573×10^{-23}
1 mm	2.375×10^{-12}	1.034×10^{-16}	1.405×10^{-14}	1.697×10^{-19}