

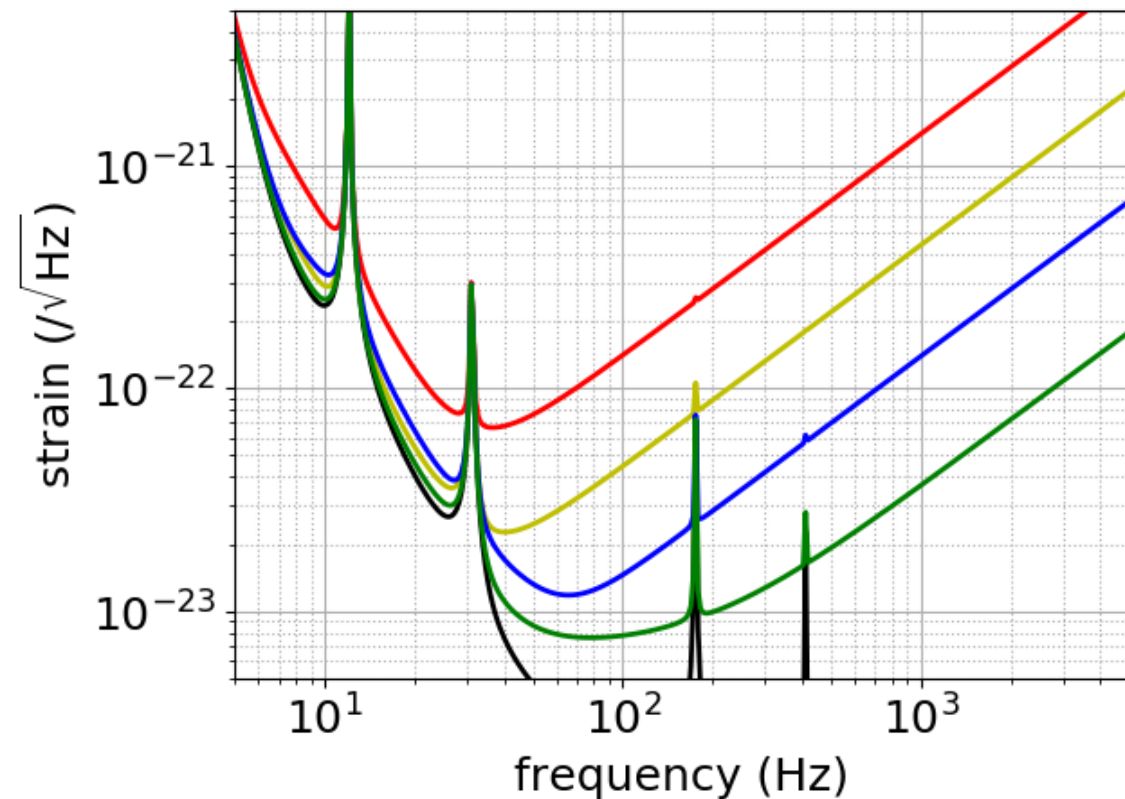
O3 Estimated Sensitivity for FPMI, PRFPMI and RSE

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Conditions

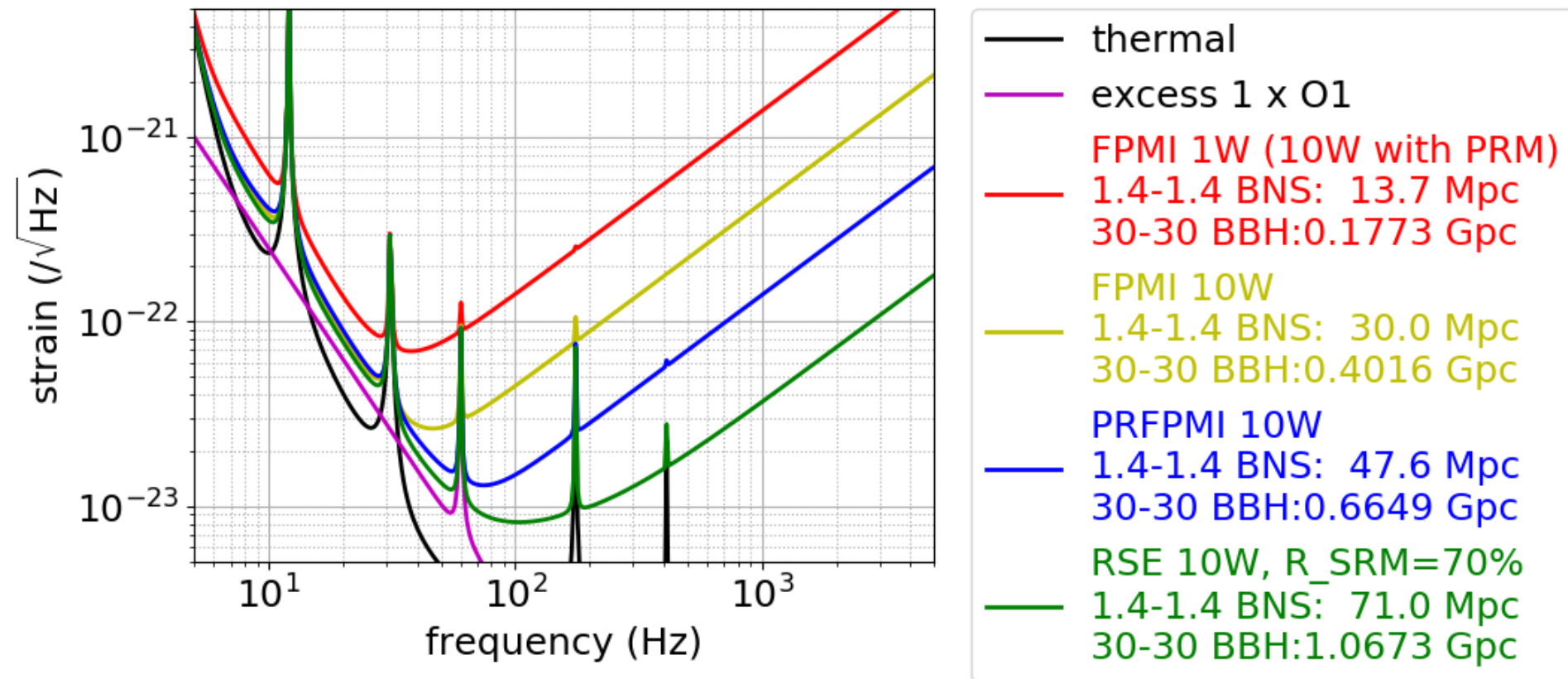
- 10W input
- Shot noise coupling with feedforward gain 100 included
- Four IFO configurations
 - **FPMI with tilted PRM** (equivalent to 1W input power)
 - **FPMI with blank PRM**
 - **PRFPMI** (R_SRM=0 %)
 - **RSE with R_SRM=70 %**
- Four excess noise models
 - No excess
 - aLIGO O1 level
 - 4x aLIGO O1 level (AdV O2 level)
 - 8x aLIGO O1 level

Sensitivity with No Excess Noise

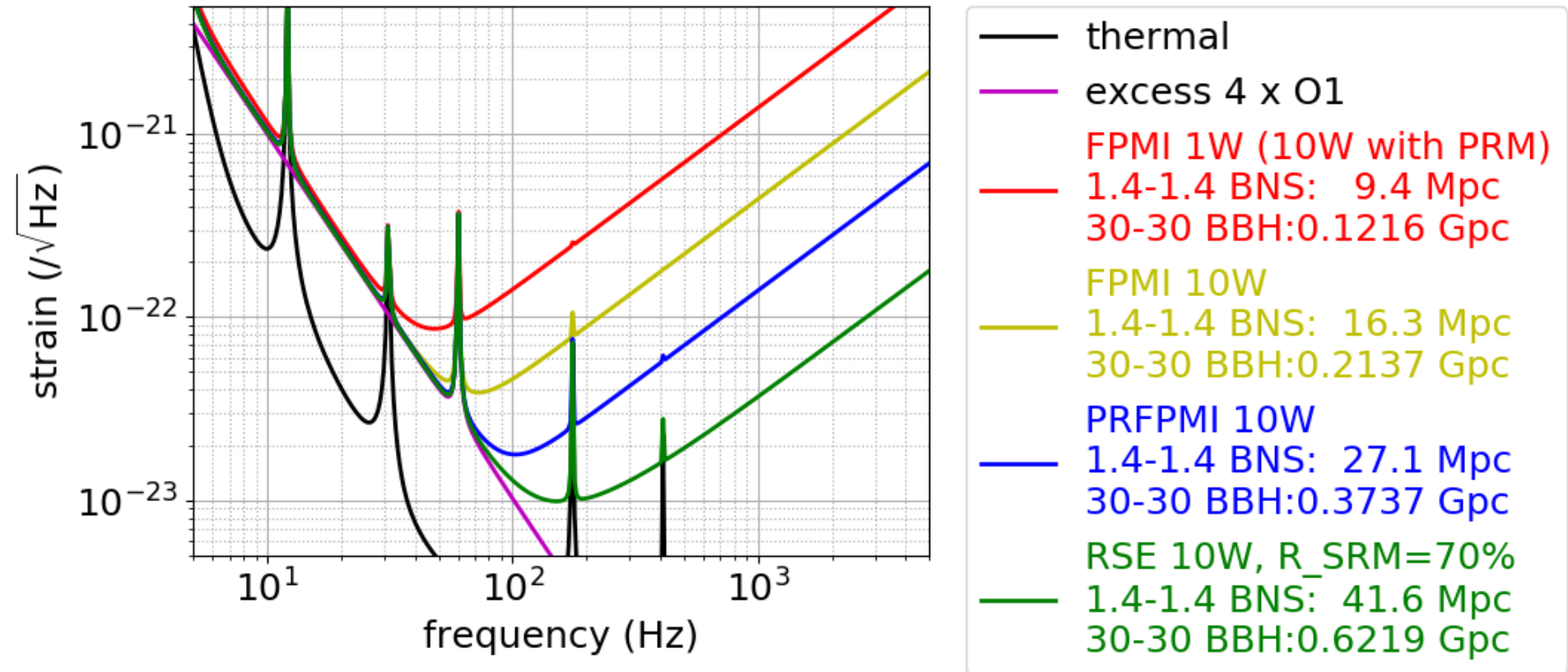


- thermal
- excess 0 x O1
- FPMI 1W (10W with PRM)**
 - 1.4-1.4 BNS: 14.5 Mpc
 - 30-30 BBH: 0.1884 Gpc
- FPMI 10W**
 - 1.4-1.4 BNS: 36.7 Mpc
 - 30-30 BBH: 0.4970 Gpc
- PRFPMI 10W**
 - 1.4-1.4 BNS: 57.9 Mpc
 - 30-30 BBH: 0.8215 Gpc
- RSE 10W, R_SRM=70%**
 - 1.4-1.4 BNS: 93.4 Mpc
 - 30-30 BBH: 1.4323 Gpc

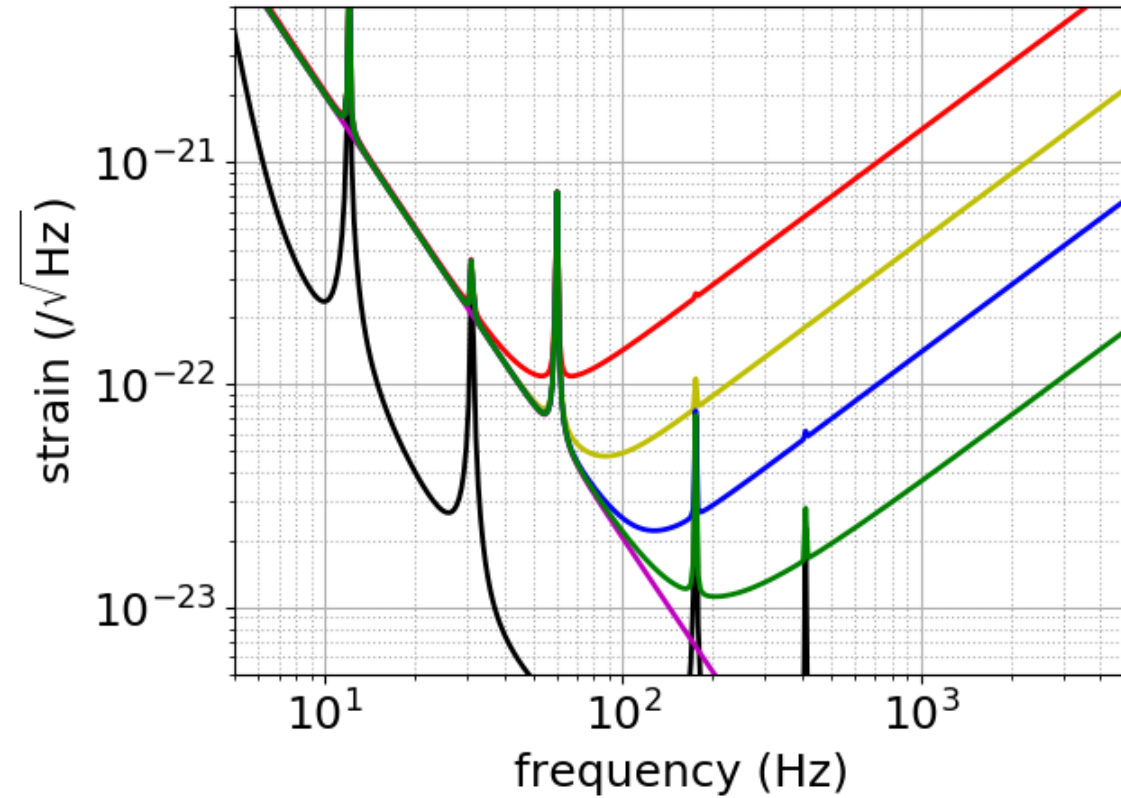
Sensitivity with O1 Excess Noise



Sensitivity with x4 O1 Excess Noise

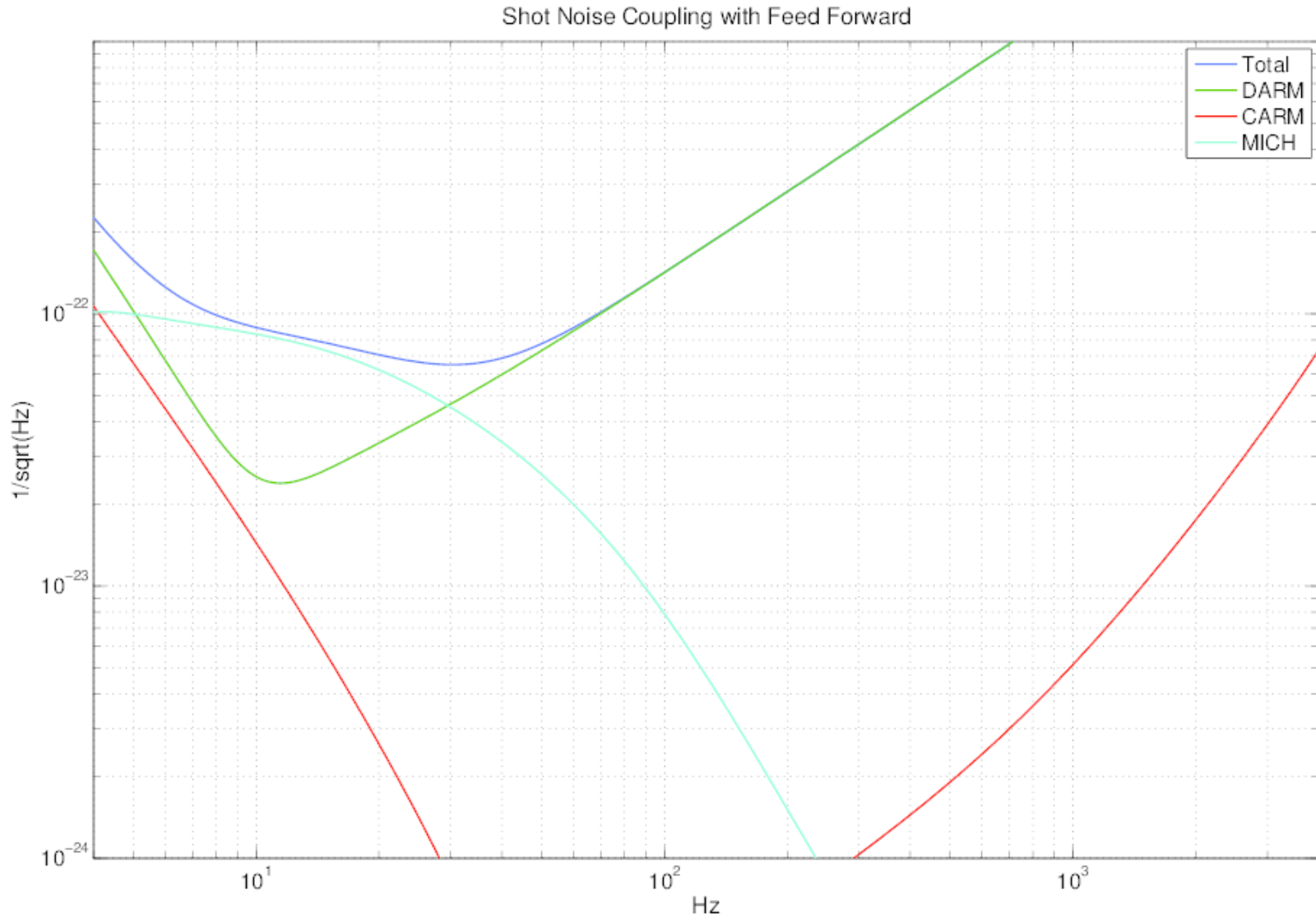


Sensitivity with x8 O1 Excess Noise

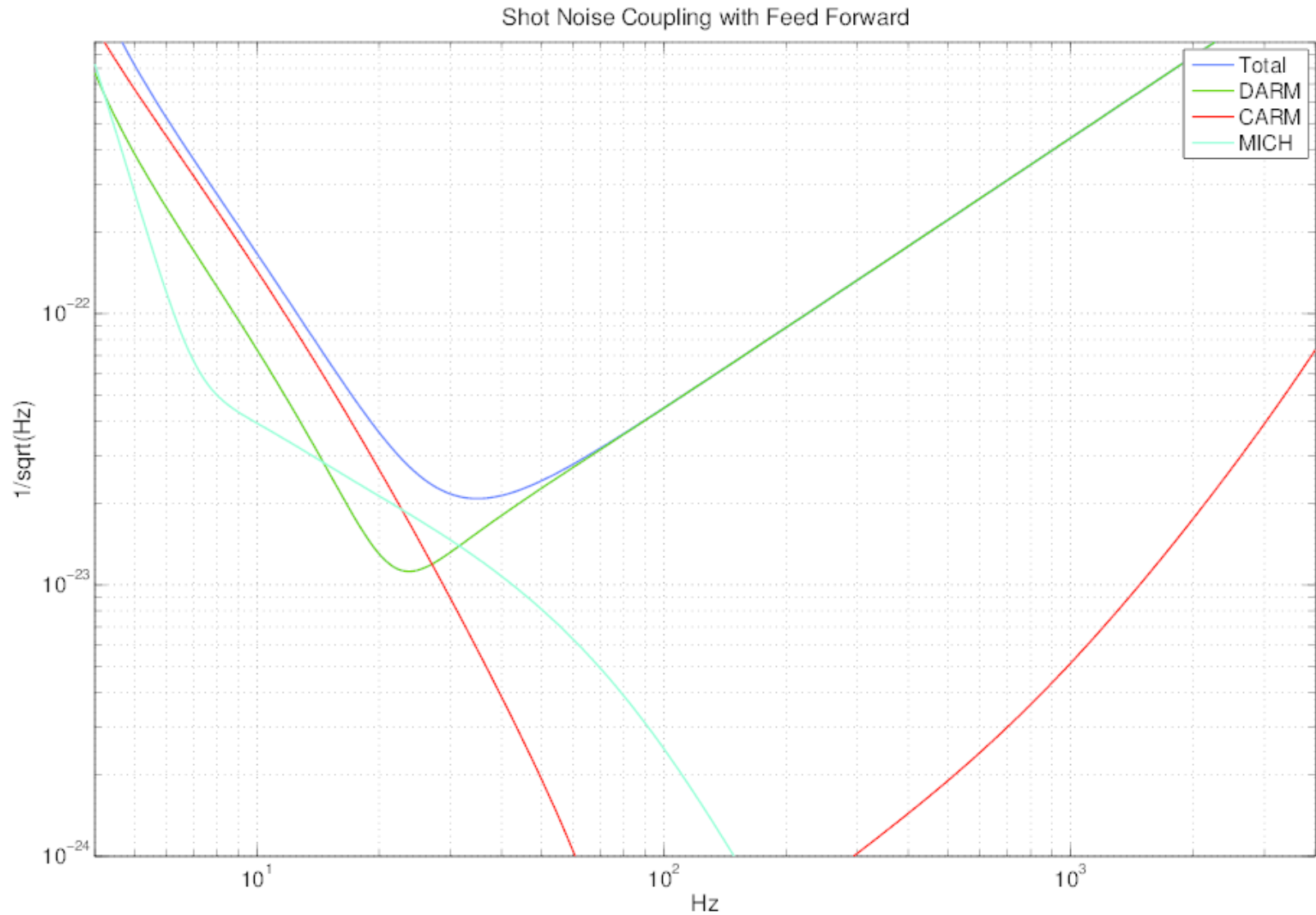


- thermal
- excess 8 x O1
- FPMI 1W (10W with PRM)**
- 1.4-1.4 BNS: 6.7 Mpc**
- 30-30 BBH: 0.0859 Gpc**
- FPMI 10W**
- 1.4-1.4 BNS: 11.2 Mpc**
- 30-30 BBH: 0.1477 Gpc**
- PRFPMI 10W**
- 1.4-1.4 BNS: 19.0 Mpc**
- 30-30 BBH: 0.2637 Gpc**
- RSE 10W, R_SRM=70%**
- 1.4-1.4 BNS: 30.2 Mpc**
- 30-30 BBH: 0.4572 Gpc**

Shot Noise Coupling **FPMI 1W**

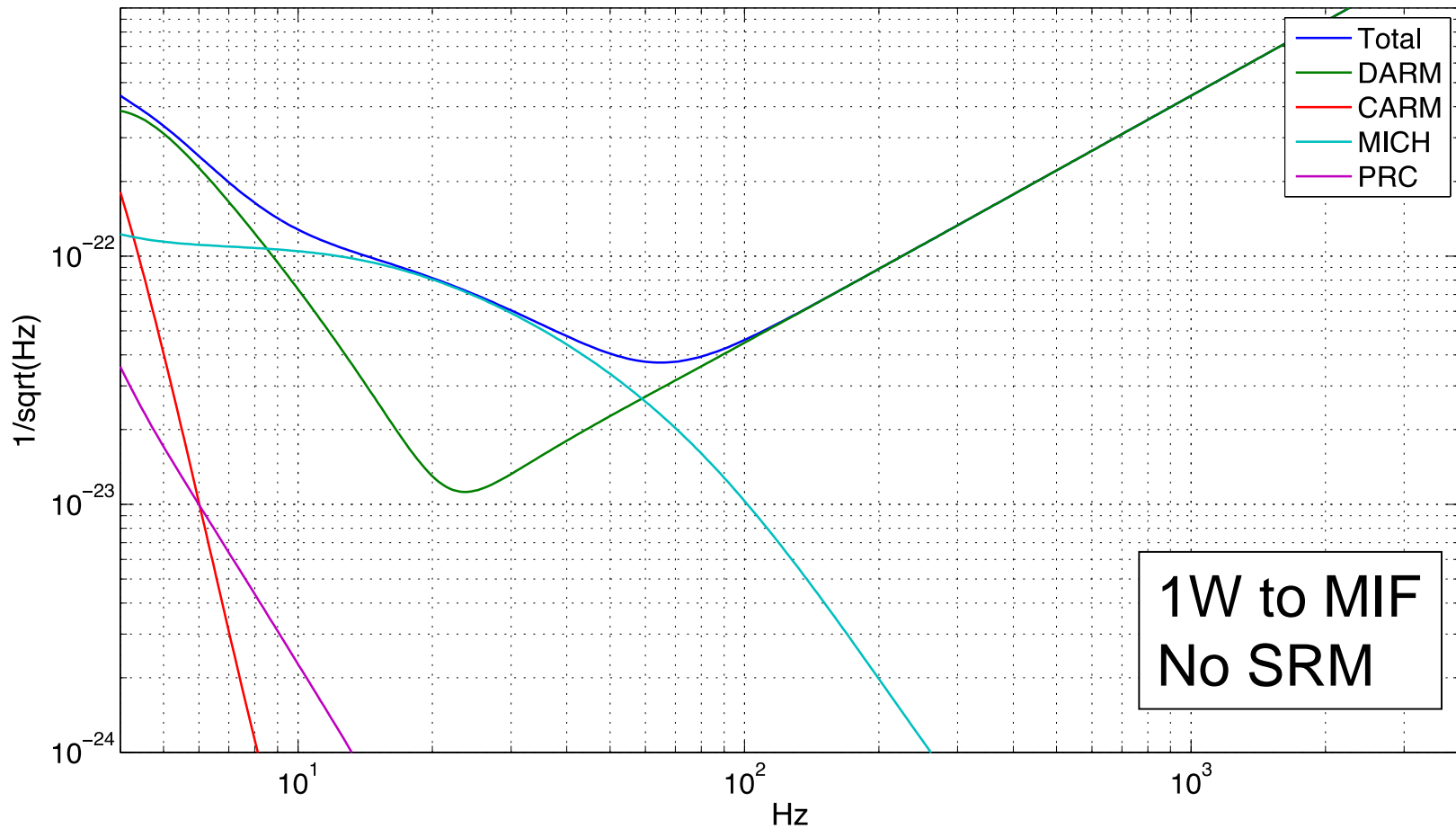


Shot Noise Coupling **FPMI 10W**



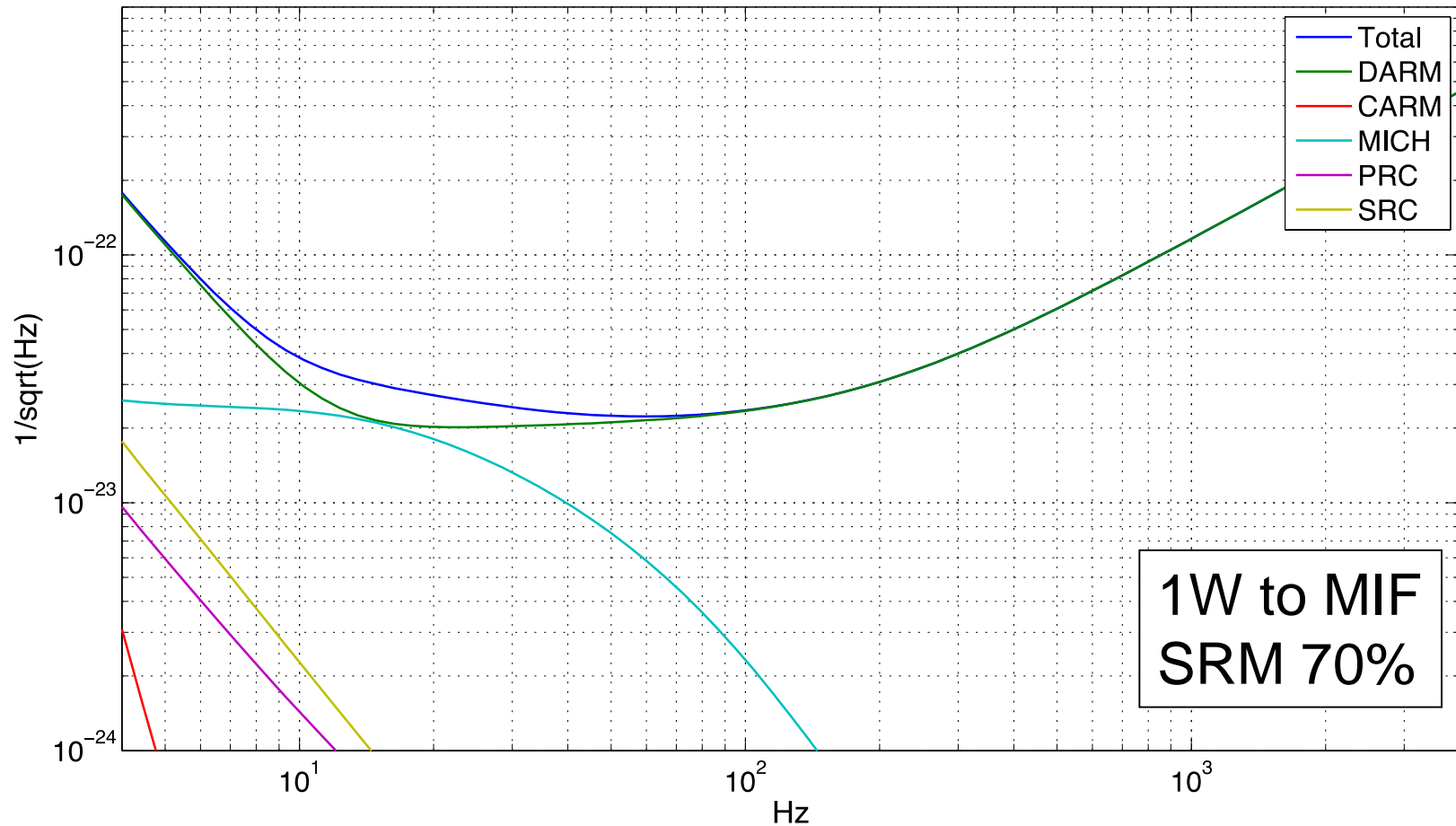
Shot Noise Coupling PRFPMI

Shot Noise Coupling with Feed Forward

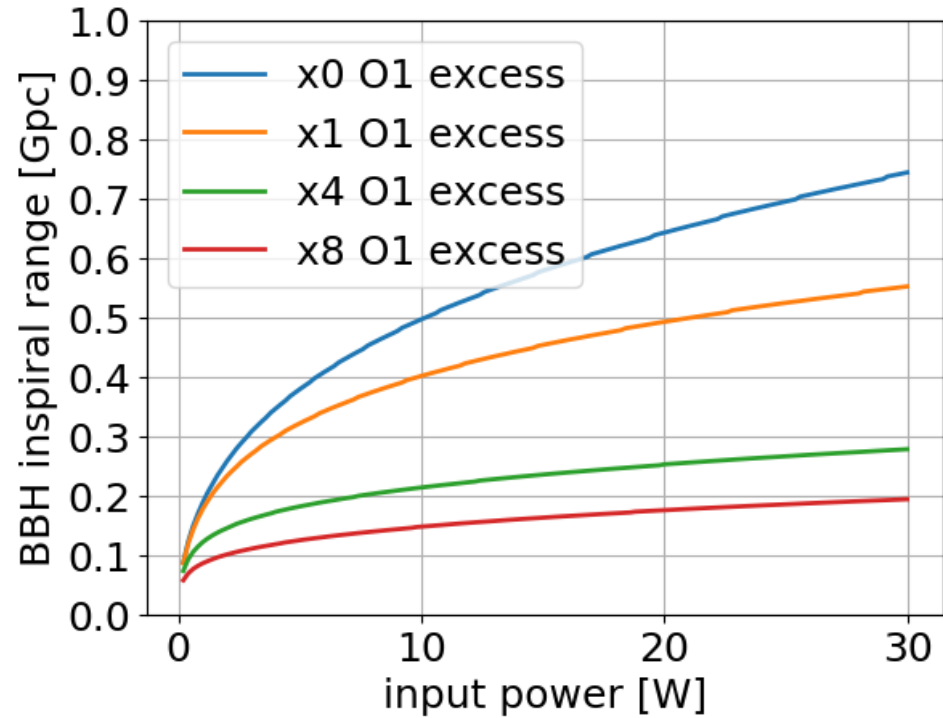
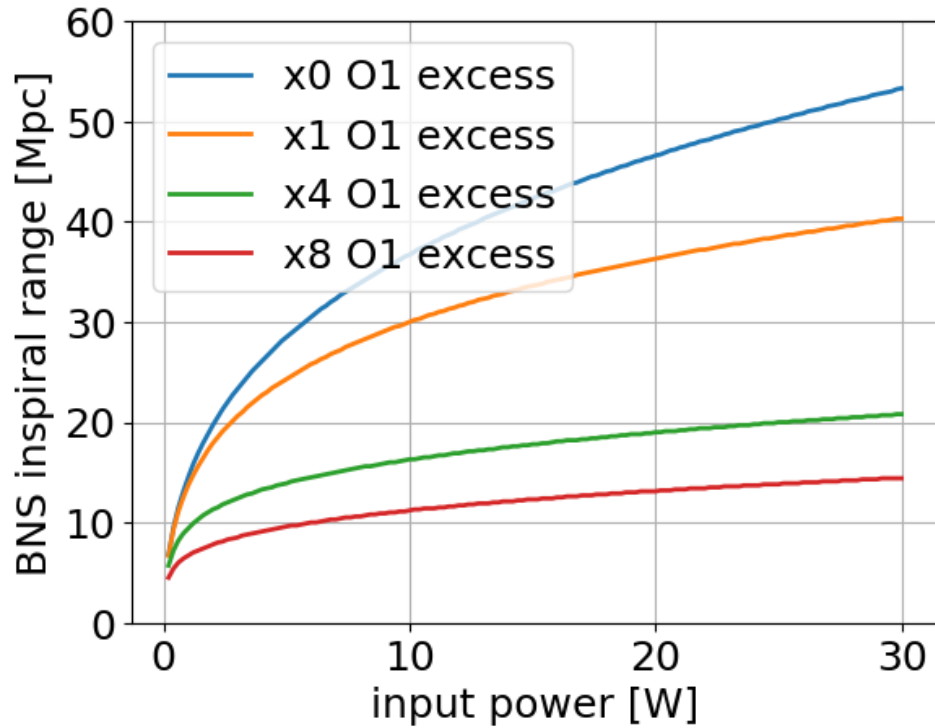


Shot Noise Coupling RSE

Shot Noise Coupling with Feed Forward



IR vs Power **FPMI**



IR vs Power PRPFMI/RSE

