TABLE 2

minimal gem	prime orientable 3-manifold M^3	$H_1(M^3)$	geometry	position in [M]
r_{1203}^{30}	$\mathbb{S}^3/D_{80}$	$\mathbb{Z}_{16}$	S^3	6_{44}
r_{1053}^{30}	$\mathbb{S}^3/D_{112}$	$\mathbb{Z}_{16}$	S^3	6_{48}
r_{18250}^{30}	$\mathbb{S}^3/(Q_{28} \times Z_5)$	$\mathbb{Z}_{20}$	S^3	6_{49}
r_{21444}^{30}	$\mathbb{S}^3/(Q_{32} \times Z_5)$	$\mathbb{Z}_2 + \mathbb{Z}_{10}$	S^3	6_{51}
r_{1045}^{30}	$\mathbb{S}^3/(P_{48} \times Z_{11})$	$\mathbb{Z}_{22}$	S^3	6_{57}
r_{1035}^{30}	$\mathbb{S}^3/(P_{48} \times Z_5)$	$\mathbb{Z}_{10}$	S^3	6_{56}
r_{1040}^{30}	$\mathbb{S}^3/(P_{48} \times Z_7)$	$\mathbb{Z}_{14}$	S^3	6_{55}
r_{19178}^{30}	$\mathbb{S}^3/(P_{120} \times Z_{23})$	$\mathbb{Z}_{23}$	S^3	6_{61}
r_{17733}^{30}	$\mathbb{S}^3/(P_{120} \times Z_{17})$	$\mathbb{Z}_{17}$	S^3	6_{60}
r_{1122}^{30}	$\mathbb{S}^3/(P_{120} \times Z_{13})$	$\mathbb{Z}_{13}$	S^3	6_{59}
r_{21303}^{30}	$(\mathbb{S}^2, (2,1), (3,1), (7,3), (1,-1))$	$\mathbb{Z}_{11}$	$SL_2(\mathbb{R})$	7_{120}
r_{17842}^{30}	$(\mathbb{S}^2, (2,1), (3,1), (8,1), (1,-1))$	$\mathbb{Z}_2$	$SL_2(\mathbb{R})$	8_{226}
r_{21350}^{30}	$(\mathbb{S}^2, (2,1), (3,1), (8,3), (1,-1))$	$\mathbb{Z}_{10}$	$SL_2(\mathbb{R})$	7_{127}
r_{28623}^{30}	$(\mathbb{S}^2, (2,1), (3,1), (9,2), (1,-1))$	$\mathbb{Z}_3$	$SL_2(\mathbb{R})$	8_{231}
r_{44846}^{30}	$(\mathbb{S}^2, (2,1), (3,1), (11,2), (1,-1))$	0	$SL_2(\mathbb{R})$	8_{243}
r_{17755}^{30}	$(\mathbb{S}^2, (2,1), (4,1), (5,2), (1,-1))$	$\mathbb{Z}_6$	$SL_2(\mathbb{R})$	7_{134}

(Table 2 continues...)

minimal gem	prime orientable 3-manifold M^3	$H_1(M^3)$	geometry	position in [M]
r^{30}_{45301}	$(\mathbb{S}^2, (2,1), (4,1), (7,2), (1,-1))$	$\mathbb{Z}_2$	$SL_2(\mathbb{R})$	8_{271}
r^{30}_{48748}	$(\mathbb{S}^2, (2,1), (5,1), (5,1), (1,-1))$	$\mathbb{Z}_5$	$SL_2(\mathbb{R})$	8_{283}
r^{30}_{48763}	$(\mathbb{S}^2, (2,1), (5,2), (5,2), (1,-1))$	$\mathbb{Z}_{15}$	$SL_2(\mathbb{R})$	7_{138}
r^{30}_{19485}	$(\mathbb{S}^2, (3,2), (3,2), (3,2), (1,-1))$	$\mathbb{Z}_3 + \mathbb{Z}_9$	Nil	6_{67}
r^{30}_{15814}	$(\mathbb{S}^2, (3,1), (3,2), (3,2), (1,-1))$	$\mathbb{Z}_3 + \mathbb{Z}_6$	Nil	6_{66}
r^{30}_{20091}	$TB \begin{pmatrix} 1 & 0 \\ 3 & 1 \end{pmatrix}$	$\mathbb{Z}_3 + \mathbb{Z} + \mathbb{Z}$	Nil	8_{377}
r^{30}_{56760}	$(T, (2,1))$	$\mathbb{Z} + \mathbb{Z}$	$SL_2(\mathbb{R})$	9_{902}
r^{30}_{21193}	$(\mathbb{RP}^2, (2,1), (3,1))$	$\mathbb{Z}_{24}$	$SL_2(\mathbb{R})$	7_{164}
r^{30}_{21188}	$(\mathbb{RP}^2, (2,1), (3,2))$	$\mathbb{Z}_{24}$	$SL_2(\mathbb{R})$	7_{165}
r^{30}_{20090}	$TB \begin{pmatrix} -1 & 0 \\ 3 & -1 \end{pmatrix}$	$\mathbb{Z}_4 + \mathbb{Z}$	Nil	8_{392}
r^{30}_{56762}	$(K, (2,1))$	$\mathbb{Z}_8 + \mathbb{Z}$	$SL_2(\mathbb{R})$	9_{941}
r^{30}_{17038}	$TB \begin{pmatrix} -4 & 1 \\ -1 & 0 \end{pmatrix}$	$\mathbb{Z}_6 + \mathbb{Z}$	Sol	8_{393}
r^{30}_{17043}	$TB \begin{pmatrix} 4 & -1 \\ 1 & 0 \end{pmatrix}$	$\mathbb{Z}_2 + \mathbb{Z}$	Sol	8_{394}
r^{30}_{56755}	$(\mathbb{A}, (2,1), (1,-2)) \bigcup_{\begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix}} (\mathbb{A}, (2,1), (1,-2))$	$\mathbb{Z}_7 + \mathbb{Z}$	-	9_{952}
r^{30}_{56759}	$(\mathbb{A}, (2,1), (1,-1)) \bigcup_{\begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix}} (\mathbb{A}, (2,1), (1,-1))$	$\mathbb{Z}_5 + \mathbb{Z}$	-	9_{950}

(Table 2 continues...)

minimal gem	prime orientable 3-manifold M^3	$H_1(M^3)$	geometry	position in [M]
r^{30}_{21476}	$(K \mathbin{\widetilde{\times}} I) \cup (K \mathbin{\widetilde{\times}} I)/\begin{pmatrix} 1 & -2 \\ -1 & 1 \end{pmatrix}$	$\mathbb{Z}_2 + \mathbb{Z}_2 + \mathbb{Z}_4$	Sol	7_{171}
r^{30}_{45716}	$(K \mathbin{\widetilde{\times}} I) \cup (K \mathbin{\widetilde{\times}} I)/\begin{pmatrix} -1 & -1 \\ 1 & 2 \end{pmatrix}$	$\mathbb{Z}_4 + \mathbb{Z}_4$	Sol	7_{169}
r^{30}_{19144}	$(\mathbb{D}, (2,1), (2,1), (1,0)) \bigcup_{\begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix}} (\mathbb{D}, (2,1), (3,2), (1,0))$	$\mathbb{Z}_4$	-	7_{173}
r^{30}_{18104}	$(\mathbb{D}, (2,1), (2,1), (1,0)) \bigcup_{\begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix}} (\mathbb{D}, (2,1), (3,2), (1,-1))$	$\mathbb{Z}_{20}$	-	7_{175}
r^{30}_{19251}	$(\mathbb{D}, (2,1), (2,1), (1,0)) \bigcup_{\begin{pmatrix} 1 & 2 \\ 1 & 1 \end{pmatrix}} (\mathbb{D}, (2,1), (3,1), (1,-1))$	$\mathbb{Z}_2 + \mathbb{Z}_2$	-	8_{410}
r^{30}_{19087}	$(\mathbb{D}, (2,1), (2,1), (1,0)) \bigcup_{\begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix}} (\mathbb{D}, (2,1), (3,1), (1,-1))$	$\mathbb{Z}_{28}$	-	7_{174}
r^{30}_{1111}	$(\mathbb{D}, (2,1), (2,1), (1,0)) \bigcup_{\begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix}} (\mathbb{D}, (2,1), (3,1), (1,0))$	$\mathbb{Z}_4$	-	7_{172}
r^{30}_{56897}	$Q_1(2,-3)$	$\mathbb{Z}_5 + \mathbb{Z}_5$	H^3	9_{1151}
r^{30}_{45332}	$Q_4(2,-1)$	$\mathbb{Z}_3 + \mathbb{Z}_6$	H^3	9_{1153}
r^{30}_{56912}	$Q_{10}(2,-1)$	$\mathbb{Z}_3 + \mathbb{Z}_9$	H^3	10_{3063}

Table 2

Remark:
Note that the two Sol manifolds of type $(K \mathbin{\widetilde{\times}} I) \cup (K \mathbin{\widetilde{\times}} I)/A$ with minimal gems r^{30}_{21476} and r^{30}_{45716} have also the structure of (geometric) graph manifolds: they are $(\mathbb{D}, (2,1), (2,1), (1,-1))$ $\bigcup_{\begin{pmatrix} 1 & 2 \\ 1 & 1 \end{pmatrix}} (\mathbb{D}, (2,1), (2,1), (1,-1))$ and $(\mathbb{D}, (2,1), (2,1), (1,0)) \bigcup_{\begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix}} (\mathbb{D}, (2,1), (2,1), (1,1))$.