Table 4 lists the measurements of $|V_{ub}/V_{cb}|$ from CLEO and ARGUS. The CLEO-II studies, which are based on about five times as much data as either the original ARGUS or the CLEO-I analyses, yield values of $|V_{ub}/V_{cb}|$ significantly lower than the earlier measurements.

Table 4: Measurements of $|V_{ub}/V_{cb}|$ using the inclusive rate in the endpoint region. The ARGUS and CLEO-I results are each based on about $200,000$ $b\overline{b}$ events, and the CLEO-II results are based on about $955,000$ $b\overline{b}$ events.

Model	ARGUS [21]	CLEO-I [22]	CLEO-II [23]
ACCMM	0.11 ± 0.012	0.09 ± 0.01	0.076 ± 0.008
ISGW	0.20 ± 0.023	0.15 ± 0.02	0.101 ± 0.010

Exclusive semileptonic decays

Measurements of exclusive semileptonic decays of B mesons are less precise and less complete than those for D mesons. Table 5 lists the branching fractions, which assume that the branching fractions of the $\Upsilon(4S)$ to B^+B^- and $B^0\overline{B}^0$ are given by $f_{+-} = f_{00} = 0.5$. Two techniques have been used to study $B \to \overline{D}^*\ell^+\nu_\ell$, the only well-measured decay mode. In the first, used by both CLEO and ARGUS, the D^* and D mesons are fully reconstructed. Signal events produce a narrow peak in the $D^* - D$ mass difference distribution, as well as a peak near zero, indicating a neutrino, in the distribution of the missing mass recoiling against the $\overline{D^*}\ell^+$ system. This latter peak is broadened by the assumption that the momentum of the B at the $\Upsilon(4S)$ is zero; in reality it is about 330 MeV/c and its direction is unknown. A small contribution to the upper shoulder of the observed missing mass distribution is attributed to $B \to \overline{D}^{**}\ell^+\nu_\ell$ decay followed by $\overline{D}^{**} \to \overline{D}^*\pi$.

Table 5: Branching fractions for exclusive B semileptonic decays. The measurements assume that $f_{+-} = f_{00} = 0.5$, where f_{+-} and f_{00} are the branching fractions of the $\Upsilon(4S)$ to B^+B^- and $B^0\overline{B}^0$. Measurements with an asterisk (*) either use more recent values of D and D^* branching fractions or have been corrected. Those with a dagger (†) used early D^* branching fractions, but, due to the complexity of the analysis procedure, are difficult to correct. These points are discussed in the review by Stone (see text). The ARGUS measurement of $B \to \overline{D}^{**}\ell^+\nu_\ell$ assumes a set of D^{**} states distributed according to the ISGW model. The limits on $b \to u$ semileptonic decays from CLEO are based on efficiencies calculated using the ISGW model; other models give different lepton energy and q^2 distributions and hence somewhat different efficiencies.

Mode	Experiment	Ref.	Branching fraction
$B^0 \to D^-\ell^+\nu_\ell$	ARGUS*	[27]	$(2.0 \pm 0.7 \pm 0.6)\%$
$B^0 \to D^-\ell^+\nu_\ell$	CLEO-I†	[28]	$(1.8 \pm 0.6 \pm 0.3)\%$
$B^+ \to \overline{D}^0\ell^+\nu_\ell$	CLEO-I†	[28]	$(1.6 \pm 0.6 \pm 0.3)\%$
$B^0 \to D^{*-}\ell^+\nu_\ell$	ARGUS*	[29]	$(4.7 \pm 0.5 \pm 0.5)\%$
$B^0 \to D^{*-}\ell^+\nu_\ell$	ARGUS* (partial rec.)	[30]	$(4.5 \pm 0.3 \pm 0.4)\%$
$B^0 \to D^{*-}\ell^+\nu_\ell$	CLEO-I*	[36]	$(4.0 \pm 0.4 \pm 0.6)\%$
$B^0 \to D^{*-}\ell^+\nu_\ell$	CLEO-II* (prelim.)	[17]	$(4.50 \pm 0.44 \pm 0.44)\%$
$B^+ \to \overline{D}^{*0}\ell^+\nu_\ell$	ARGUS*	[31]	$(6.6 \pm 1.6 \pm 1.5)\%$
$B^+ \to \overline{D}^{*0}\ell^+\nu_\ell$	CLEO-I†	[28]	$(4.1 \pm 0.8^{+0.8}_{-0.9})\%$
$B \to \overline{D}^{**}\ell^+\nu_\ell$	ARGUS	[29]	$(2.7 \pm 0.5 \pm 0.5)\%$
$B^+ \to \omega\ell^+\nu_\ell$	CLEO-II	[32]	$< 2.1 \times 10^{-4}$ (90% CL)
$B^+ \to \rho^0\ell^+\nu_\ell$	CLEO-II	[32]	$< 2.1 \times 10^{-4}$ (90% CL)
$B^0 \to \rho^-\ell^+\nu_\ell$	CLEO-II	[32]	$< 4.1 \times 10^{-4}$ (90% CL)
$B^0 \to \pi^-\ell^+\nu_\ell$	CLEO-II (prelim.)	[17]	$< 3.3 \times 10^{-4}$ (90% CL)